NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM

MUNICIPAL SEPARATE STORM SEWER SYSTEM DISCHARGE PERMIT

Permit Number: MD0068357

2018 Annual Report

Submitted to:

State of Maryland
Department of the Environment
1800 Washington Blvd.
4th Floor, STE 440 Baltimore,
Maryland 21230-1708

Submitted by:

Frederick County
Office of the County Executive
30 North Market Street
Frederick, Maryland 21701

December 26, 2018

Executive Summary

The submission of this annual progress report to the Maryland Department of Environment (MDE) fulfills requirements specified under the Frederick County National Pollutant Discharge Elimination System (NPDES) Municipal Separate Storm Sewer System (MS4) Permit No. 11-DP-3321, MD0068357. This will be the County's fourth report on meeting the requirements under the new third-generation Phase I NPDES MS4 permit, which went into effect December 30, 2014. This progress report covers programs in effect within the annual reporting period for the entire 2018 fiscal year (July 1, 2017 – June 30, 2018).

Continuing progress has been made in the County's NPDES programs since the 2017 Annual Report was submitted. The sections in this Annual Report follow specific sections presented under Part IV, Standard Permit Conditions, of the County's NPDES Permit to document how required elements of the County's stormwater program are being implemented. Reapplication required under Part 5, section C of the County's permit is also included within this submission.

Table of Contents

List of Tables

List of Figures

Appendices

A. County Attorney Certification
B. Industrial and Commercial Sources
C. As-Built Protocol
D. Erosion and Sediment Control Enforcement Authority
E. IDDE Investigation Reports Submitted by KCI Technologies, Inc. to Frederick County
F. Additional Follow-up Documentation for Illicit Discharge Investigations
G. Hotspot Site Investigation Jr Form
H. Additional Follow Up for Hotspot Site Investigations
I. SWPPP Inspection Reports and Trainings
J. Street Sweeping Standard Operating Procedure
K. Inlet Cleaning Standard Operating Procedure
L. Herbicide, Pesticide, and Fertilizer Use
M. Media Files of Public Record
N. Restoration Plan
O. Impervious Accounting Memo
P. Rooftop Disconnect Protocol
Q. Non-Rooftop Disconnect Protocol
R. Completed Restoration Activities
S. Public Advertisement of Watershed Assessments
T. Peter Pan Run Monitoring Report
U. Restoration Site Monitoring Report
V. Program Funding
W. Reapplication

List of Acronyms

AFF	Alice Ferguson Foundation
BayFAST	Bay Facility Assessment Scenario Tool
BIBI	Benthic Index of Biological Integrity
BMP	Best Management Practices
CCB	Coal Combustion Byproducts
CIP	Capital Improvement Program
CWP	Center for Watershed Protection
CY	Calendar Year
DEL	Delivered
DPR	Division of Parks and Recreation
DPP	Division of Planning and Permitting
DPW	Division of Public Works
DUSWM	Division of Utilities and Solid Waste Management
ECS	Environmental Compliance Section
EMC	Event Mean Concentration
EOS	Edge of Stream
EPA	United States Environmental Protection Agency
ESD	Environmental Site Design
FAP	Financial Assurance Plan
FCPS	Frederick County Public Schools
FCSS	Frederick County Stream Survey
FIBI	Fish Index of Biological Integrity
FY	Fiscal Year
GHC	Green Homes Challenge
GIS	Geographic Information System
HSI	Hotspot Site Investigation
ICPRB	Interstate Commission on the Potomac River Basin
IDDE	Illicit Discharge Detection and Enforcement
IIT	Interagency Information Technologies
MAST	Maryland Assessment Scenario Tool
MCWA	Monocacy & Catoctin Watershed Alliance
MDA	Maryland Department of Agriculture
MDE	Maryland Department of the Environment
MEP	Maximum Extent Practicable
µg/L	Micrograms Per Liter
MS4	Municipal Separate Storm Sewer System
MSDS	Material Safety Data Sheet
MUCFC	Maryland Urban & Community Forestry Committee
NAICS	North American Industry Classification System

NFWF	National Fish and Wildlife Foundation
NOI	Notice of Intent
NPDES	National Pollutant Discharge Elimination System
NRC	National Response Center
OSER	Office of Sustainability and Environmental Resources
PE	Professional Engineer
P&I	Permits and Inspections
PRWC	Potomac River Watershed Cleanup
ROW	Right-of-way
RSC	Regenerative Stormwater Conveyance
SARA	Superfund Amendments and Reauthorization Act
SCA	Stream Corridor Assessment
SCD	Soil Conservation District
SOP	Standard Operating Procedure
SWM	Stormwater Management
SWPPP	Stormwater Pollution Prevention Plans
SW-WLA	Stormwater Wasteload Allocation
TPH	Total Petrochemical Hydrocarbons
TMDL	Total Maximum Daily Load
TN	Total Nitrogen
TP	Total Phosphorus
TSS	Total Suspended Sediment
WIP	Watershed Implementation Plan
WLA	Wasteload Allocation
WPRP	Watershed Protection and Restoration Program
WRAS	Watershed Restoration Action Strategy
WRE	Water Resources Element

1 Introduction

The submission of this annual progress report to the Maryland Department of Environment (MDE) fulfills requirements specified under the Frederick County National Pollutant Discharge Elimination System (NPDES) Municipal Separate Storm Sewer System (MS4) Permit No. 11-DP-3321, MD0068357. This will be the County's fourth report on meeting the requirements under the new third-generation Phase I NPDES MS4 permit, which went into effect December 30, 2014. This progress report covers programs in effect within the annual reporting period for the entire 2018 fiscal year (July 1, 2017 – June 30, 2018).

The County continues to excel in stormwater management; long-term watershed monitoring; watershed assessment, restoration and retrofit implementation; developing Geographic Information System (GIS) data; and conducting public outreach activities in accordance with the requirements of the permit. NPDES funding remains adequate to meet the conditions of the permit.

The sections in this Annual Report follow specific sections presented under Part IV, Standard Permit Conditions, of the County's NPDES Permit to document how required elements of the County's stormwater program are being implemented. An introduction to the document is presented in Section 1. Section 2, Permit Administration, provides names, functions, and contact information for all primary administrative and technical personnel, and liaisons responsible for permit compliance as well as an organizational chart (Figure 1 and Figure 2). Section 3, Legal Authority, documents the recertification from the County Attorney that the County possesses the authority to perform NPDES-related activities. Section 4, Source Identification, presents an update on the County's efforts in updating both their GIS data library and their database for tracking new and existing stormwater management facilities, along with a table detailing the status of important GIS datasets. In Section 5, Management Programs, the County presents progress summaries and updates of several permit management activities, such as erosion and sediment control, illicit discharge detection, spill response, litter and floatables, road maintenance, pesticide/herbicide use, and public outreach. Section 6, Watershed Assessment and Restoration, reports on progress of the County's watershed assessments, references the County's stormwater restoration plan, which addresses Total Maximum Daily Load (TMDL) requirements and impervious area reduction, presents restoration projects by type, and includes public participation comment review periods for County watershed assessments and plans completed in fiscal year (FY) 2018. Section 7, Assessment of Controls, discusses the County's monitoring activities, including the long-term physical, chemical, and biological monitoring program at Peter Pan Run, and monitoring at a land use-specific Best Management Practice (BMP) outfall. Results of this program, along with pollutant load estimates, biological and physical assessment data, and other related information are presented as an appendix to the report. Section 8 covers program funding in accordance with the County's Operating budget, Capital Improvement Program (CIP) budget, Financial Assurance Plan (FAP), and Watershed Protection and Restoration Program (WPRP) Annual Report. Section 9, Special Programmatic Conditions, reports on activities the County has employed in order to work towards meeting the Chesapeake Bay TMDL and offers a brief status summary of the Water Resources Element.

Similar to the last progress report submitted for the entire 2017 fiscal year (July 1, 2016 – June 30, 2017), this will be a data-driven report with the majority of program information included in the accompanying database or as appendices to the main document.

Twenty-three (23) appendices have been included in this document. Contents of all appendices are also available on the CD, either in Microsoft Word, Microsoft Excel, PDF, or database format.

All sections of the document have been reproduced electronically and can be found on the accompanying CD.

2 Permit Administration

In FY18, the Office of Sustainability and Environmental Resources (OSER), within the Office of the County Executive, managed the County's NPDES permit. Additional intercounty personnel are responsible for other various permit components that support compliance with the permit. Staff and their responsibilities related to NPDES permit administration are listed below.

The County Executive's Office is located at 12 E. Church Street, Frederick, MD 21701. OSER offices are located at 30 North Market Street, Frederick, MD 21701.

Office of the County Executive

- Michael Marschner, Special Administrative Director, 301.600.1133
  Oversees OSER, DUSWM, DPW, DPR. Supports permit compliance programs.

Office of Sustainability and Environmental Resources, sustainablefrederickcounty.org/

- Shannon Moore, Manager, 301.600.1413
  Manages Office and oversees permit compliance programs.

- Donald Dorsey, Project Manager IV, 301.600.2952
  Supports and manages NPDES activities, Capital Improvement Project development and implementation.

- Jeremy Joiner, Project Manager III, 301.600.1350
  Supports and manages NPDES activities, coordinates watershed restoration efforts.

- Angelia Miller, Project Manager I, 301.600.2325
  Supports and manages NPDES activities, coordinates Industrial Discharge Permits for stormwater and pollution prevention programs.

- Linda Williamson, Project Manager I, 301.600.1741
  Supports and manages NPDES activities and programs, coordinates BMP maintenance projects for stormwater.

- Suzanne Cliber, Green Homes Challenge Coordinator, 301.600.7414
  Supports NPDES activities, coordinates watershed restoration efforts related to grants.

- Kim Campbell, Administrative Specialist IV, 301.600.1416
  Administrative support for the Office of Sustainability and Environmental Resources.

Division of Planning and Permitting (DPP), Environmental Compliance Section (ECS)

- Rick Masser, Chief Environmental Inspector

Managed Sediment and Erosion Control Program. Supervised collection of information for NPDES permit, to include grading permits and stormwater facility maintenance inspections. Retired February 2018.

- Dave Crable, Engineering Specialist III, (DPP), 301.600.1137
  Maintains database of stormwater management facilities, and reviews stormwater management development plans related to the NPDES permit. Oversaw transition for ECS after retirement of Rick Masser (March 2018-September 2018).

- Eric Dodson, Environmental Inspector, promoted in September 2018 to Chief Environmental Inspector, 301.600.3507
  Manages Sediment and Erosion Control Program, supervises collection of information for NPDES permit that includes grading permits and stormwater facility maintenance inspections.

Division of Planning and Permitting (DPP), Department of Development Review

- Vijay Kapoor, Engineering Specialist I, 301.600.1560
  Reviews stormwater management development plans related to the NPDES permit.

Division of Planning and Permitting (DPP), Department of Planning

- Tim Goodfellow, Principal Planner II, Comprehensive Planning, 301.600.2508
  Coordinates planning activities related to the NPDES permit.

In addition, OSER staff also collaborates with the Division of Utilities and Solid Waste Management (DUSWM), the Division of Public Works (DPW), the Division of Parks and Recreation (DPR), The Division of Emergency Management (DEM), and the Interagency Information Technologies (IIT) Division.

Permit information is included in the related table PermitInfo of the MDE_NPDES_MS4 geodatabase.

Figure 1 - Frederic County Covernment Organizational Chart - OSER

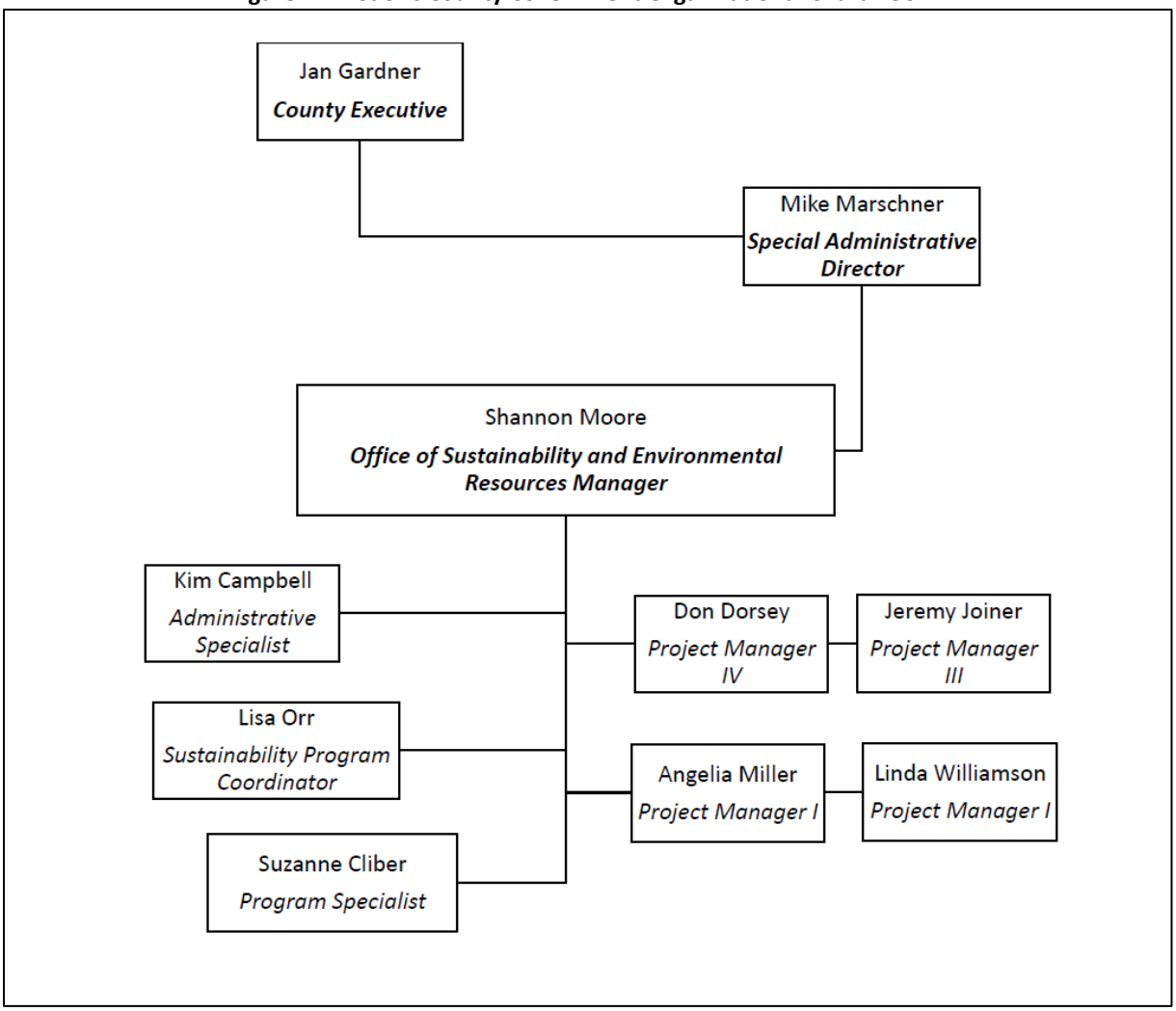
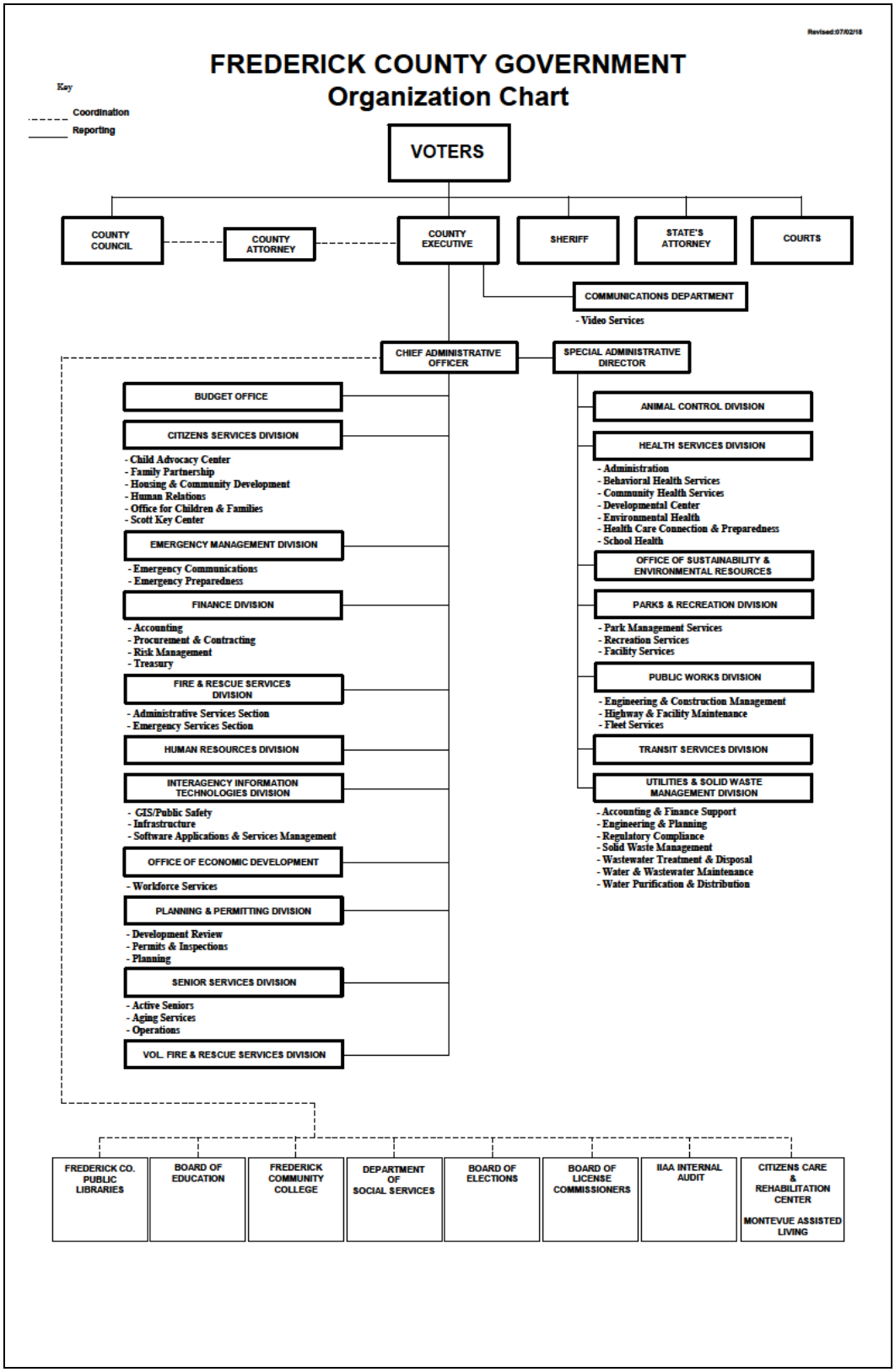


Figure 2 - Frederick County Government Organizational Chart



3 Legal Authority

Appendix A includes a letter from Assistant County Attorney, Kathy Mitchell, certifying that the County has the legal authority to meet the requirements of its permit.

4 Source Identification

This section documents permit-required efforts under Parts IV.C. 1 through 6. Frederick County has collected source identification data on all permit-required topics. The County has a centralized County GIS office within the IIT Division. This approach includes centralized functions such as the development and maintenance of core data layers, development of data standards, system administration, and general oversight of GIS activities countywide. Frederick County GIS distributes countywide base maps and Orthophotography. In addition, Frederick County GIS offers a free GIS data download service that includes GIS Base Data, Orthophotography, Contour-Planimetric Data, and Parcel Data. This service can be found at http://www.frederickcountymd.gov/5450/GIS-Data-Products under "Download GIS Data".

The Frederick County GIS office continually progresses in enhancing the County's GIS capabilities and in compiling source identification data. OSER, DPP and ECS collaborated with Frederick County IIT and staff to develop and implement digital submission standards for improvement and as-built plan submissions. For further details of the outreach program, see section 5.6.

4.1 Storm Drain System

The County currently maintains a Stormwater System database which includes data for stormwater inventory records for all infrastructure including culverts, storm drains, structures, ditches, outfalls, and ponds. Storm drain system data is contained within the Outfall feature class (1,447 records) and includes related drainage areas, and other related tables. Major attributes that are captured in these tables include IDs, structure characteristics, status, owner, and general comments. In addition to the required feature classes, Frederick County maintains a storm drain and structure inventory, which includes pipes (19,450 records) and structures (19,933 records).

4.2 Industrial and Commercial Sources

A list of the total number of industrial and commercial facilities that the County has determined may have the potential to contribute significant pollutants is included in Appendix B. Information provided in this appendix includes: facility name, company, address, city, state, zip code, respective North American Industry Classification System (NAICS) code, and facility description.

4.3 Urban Best Management Practices

At present, Urban Best Management Practices (BMPs) are included in the MDE_NPDES_MS4 geodatabase. Records for stormwater facilities will be included in BMPPOI feature class and includes associated drainage areas and other related tables. Major attributes that are captured in these tables include structure ID, BMP type, BMP description, and acres treated. New facilities are entered into the database upon approval of the as-built survey.

In its October 31, 2017 review of the 2016 Annual Report, MDE "requests that the County provide the status of as-built certifications for all completed BMPs in the next Annual Report."

The County initiated a conversation on this topic in an MDE/MS4 meeting in 2016 and has been working with MDE, Anne Arundel County, and Baltimore City to determine appropriate procedures for assigning as-built and database dates depending on the type and quality of records available. At the MDE/MS4 meeting held November 3, 2017, MDE indicated they would issue a policy describing the minimum criteria for receiving credit, with the expectation that permittees would provide a standard operating procedure (SOP) describing how it will be addressed.

Frederick County has had continued correspondence with MDE in regards to their SOP and provided a memo entitled, Frederick County proposed Standard Operating Procedures for use of Alternative Methods for documenting Best Management Practices (BMP) built date and determination of water quality treatment for MS4 Permitting Purposes. Frederick County intends to use the approach described in this memo submitted to MDE August 28, 2018, attached as Appendix C. Construction built dates will be determined based on available data described in the following scenarios:

- BMP with no as-built, but with a plan, stormwater management (SWM) report and Construction Completion Forms
- BMP with no as-built, but with a plan and SWM report but no Construction Completion Forms
- BMP with no as-built, but with plan and no SWM report or Construction Completion Forms
- BMP with no as-built and no plan or SWM report or Construction Completion Forms
- ESD/Microscale practices not covered by the previous scenarios

4.4 Impervious Surfaces

The MS4 boundary and impervious surfaces have been compiled for Frederick County. Impervious data are included in the MDE_NPDES_MS4 geodatabase table, ImperviousSurface.

As noted in greater detail in Section 6.2, Frederick County Government updated its impervious cover analysis in FY18 using the jurisdictional boundary as requested by MDE's 2017 Annual Report comments. The County's updated procedure, data, and analysis are also included in this submission.

4.5 Monitoring Locations

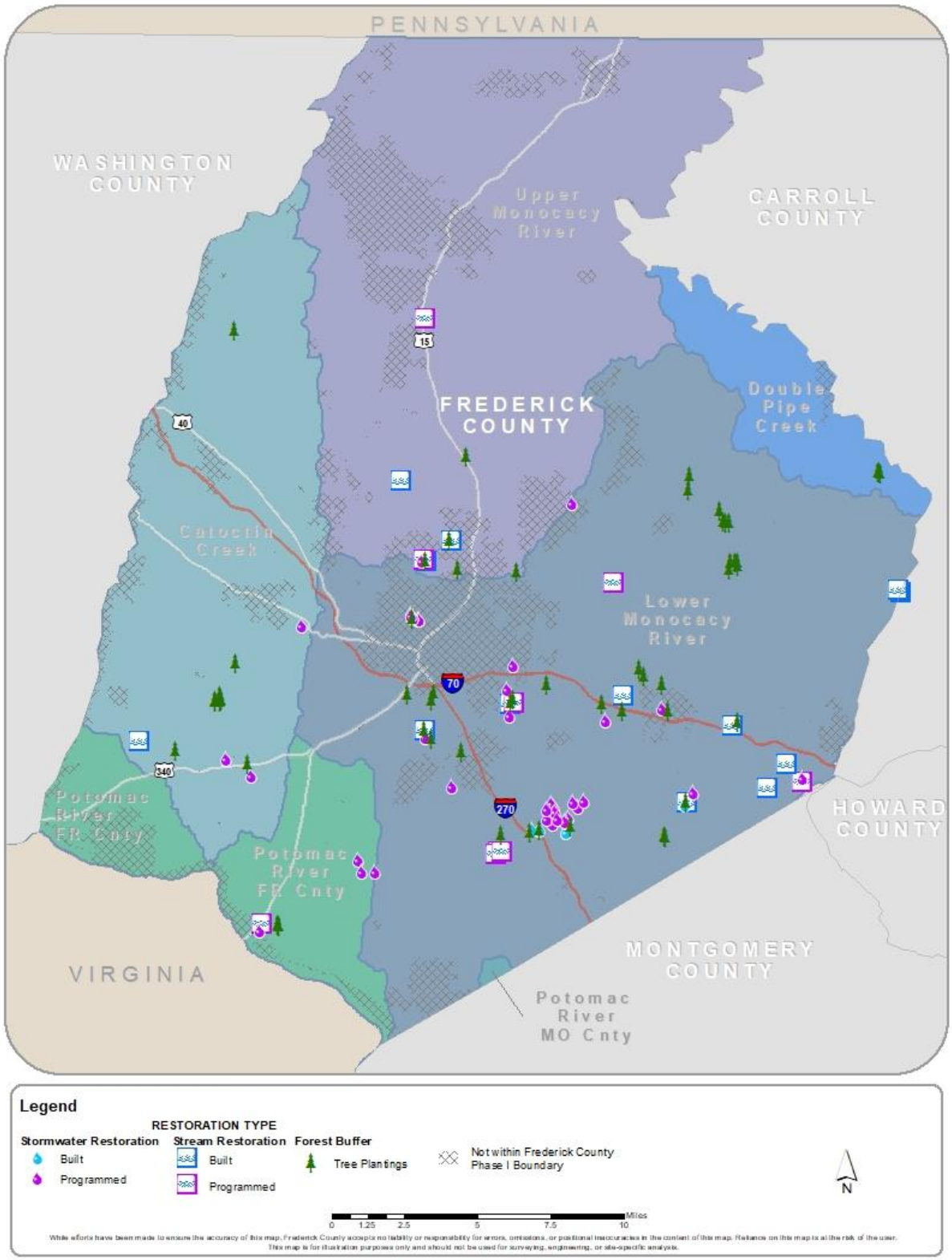
The County maintains and updates, as needed, an inventory of biological and chemical monitoring sites. The 2018 data are included in the following tables in the MDE_NPDES_MS4 geodatabase: BiologicalMonitoring, ChemicalMonitoring, MonitoringSite, and MonitoringDrainageArea. Major features that are captured in these tables include site ID, date and time, assessment results (e.g., BIBI/FIBI, habitat scores, water quality measurements), monitoring drainage area, and general comments. Historical data is also provided in the MDE_NPDES_MS4 geodatabase in the tables referenced above.

In previous annual report comments, MDE states that temperature data is "missing for stormflow outfall measurements." Historically, Frederick County did not install a temperature data logger for the outfall station; rather, a YSI multi-parameter probe has only been deployed at the instream station. Based on MDE's feedback, a temperature logger was deployed at the outfall on 1/20/2017 and the County has successfully captured temperature data. In August 2017, the County invested in significant improvements to the monitoring sites, including the purchase of new water quality monitoring equipment for continued assurance that the monitoring requirements are met. Section 7 has further detail.

4.7 Water Quality Improvement Projects

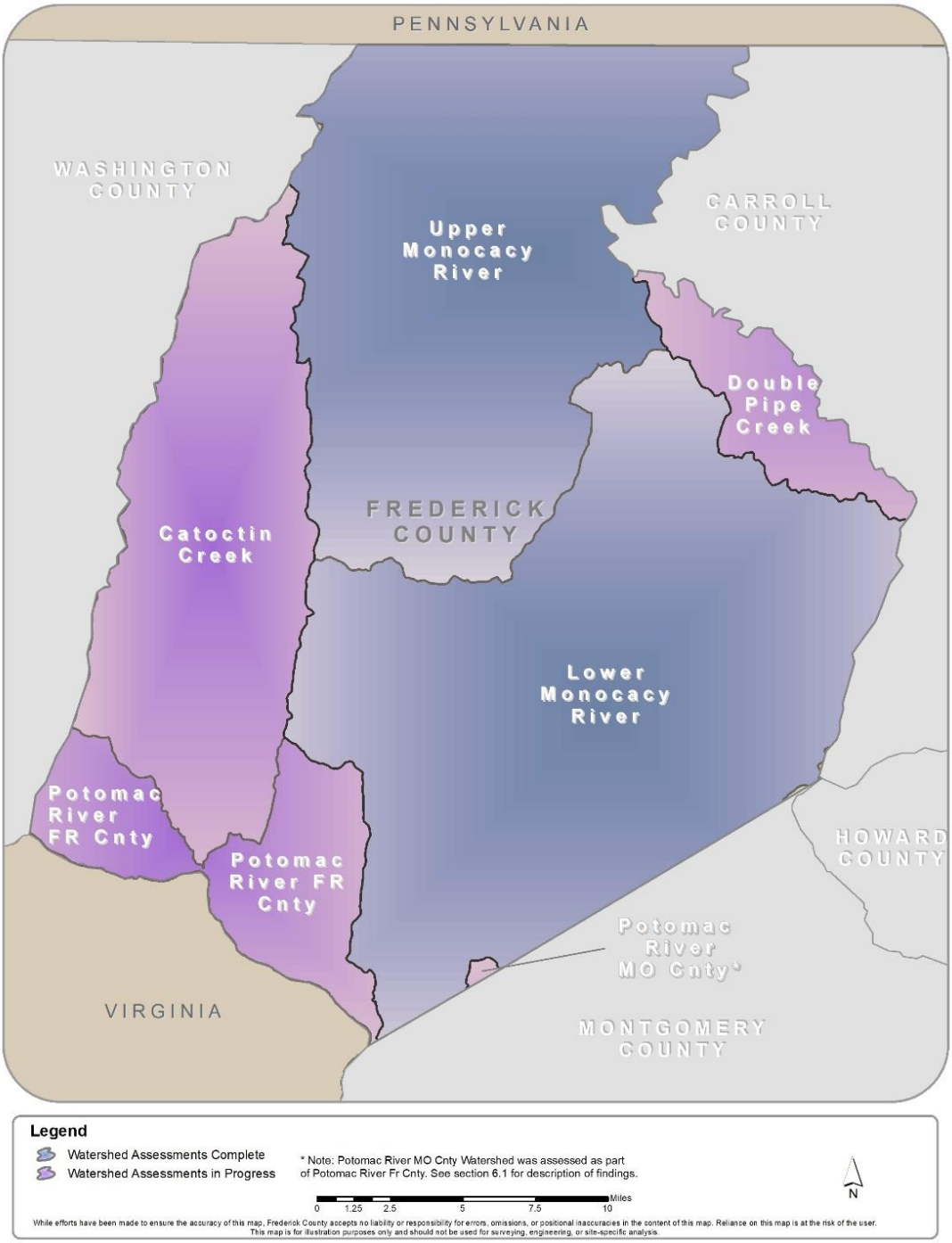
The County maintains a geodatabase where water quality improvement projects are identified and tracked. The built and programmed improvement projects are included in the MDE_NPDES_MS4 geodatabase and depicted in Figure 3. Additional information about these projects can be found in the County's Stormwater Restoration Plan and/or Financial Assurance Plan.

Figure 3 - Watershed Restoration Projects



The County has also conducted watershed studies, identifying, ranking, and grouping potential opportunities within its watersheds. Upper Monocacy and Lower Monocacy watershed studies are complete, and the remaining three watershed studies are well underway within Catoctin Creek, Double Pipe Creek and Potomac Direct watersheds as shown in Figure 4.

Figure 4 - Watershed Assessment Status



5 Management Programs

This section documents permit-required efforts under Parts IV.D. 1 through 6. Frederick County continually evaluates its stormwater management programs in an effort to identify and bring about needed improvements as required under its NPDES permit. The County continues to evaluate its progress and effectiveness to control stormwater discharges to the maximum extent practicable (MEP). Current program components, improvements made during the timeframe covered in this report, and plans for future activities, particularly as the County continues to implement management programs under its new permit, are discussed below.

5.1 Stormwater Management Programs

Frederick County maintains its current Stormwater Management Program in compliance with Environmental Article, Title 4, Subtitle 2, Annotated Code of Maryland. The County will continue to do so through plan review and inspection of all developer projects, through implementation of the 2000 Maryland Stormwater Design Manual (Effective October 2000, Revised May 2009; MDE 2000), and through the Stormwater Act of 2007.

5.1.1 Maintenance Inspections of Stormwater Management Facilities

The Department of Permits and Inspections, Environmental Compliance Section (ECS) conducts a program of preventative maintenance inspections of constructed and functioning stormwater management facilities located within Frederick County, and most of its municipalities. Excluded from ECS jurisdiction are facilities located within Frederick City, and within the municipal boundaries of Mount Airy. As required under the County's MS4 permit, the County conducts these inspections on a sequential basis of once within a year after the as-built drawing approval, and then on a triennial basis thereon in perpetuity.

Responsible parties of noncompliant facilities receive notices that outline the failings observed by the inspector, what has to be completed to correct the failings, and a timeframe in which the corrections should be completed. Appropriate follow-up inspections and escalating enforcement techniques are completed, as necessary, until compliance is obtained. Frederick County is continuing to improve the process of enforcement to ensure that owners comply and resolve failing facilities within an acceptable timeframe. Staff within OSER have helped to improve tracking and response in relation to data management. Statistics below aid in showing that the County performs follow-up inspections and coordination to obtain compliance after a facility receives a failing status.

For FY18, Frederick County's Urban BMP database had 1,306 BMPPOI points and 1,678 related BMP records. During the inspection process, ECS visits the overall site (BMPPOI) and records one inspection record for the BMPPOI stored within their database. The numbers below are tallies of overall facility inspections of the BMPPOI. Within the MDE geodatabase, one BMPPOI can have many BMP records; therefore, inspections for one grouping of facilities are sometimes multiplied within the BMPInspections table. The following inspections and follow-up inspections were completed during 7/1/17 through 6/30/18:

- Number of BMPPOIs inspected: 533 (As noted above, these 533 inspections appear in the geodatabase as 791 FY18 BMPInspection records)
- Number of initial BMPPOI inspections (Identified in the gdb with 'FY18 Initial'): 258
- Number of BMPs receiving as-built inspection in FY18 (Identified in the gdb with 'As-Built Inspection', with Reporting Year 2018): 137

- Number of 2018 BMPPOIs FAILING initial inspection: 52
- Number of 2018 BMPPOIs FAILING the initial inspection but subsequently PASSING: 45
- Number of 2018 BMPPOIs FAILING the initial inspection and are still currently FAILING: 7

- Number of outstanding issues at the end of FY17: 8
- Number of previously failing BMPs where issues were resolved: 5
- Number of previously failing BMPs (FY17), still failing: 3

- Number of total failing BMPs to be carried over in follow-up inspections in FY2019: 7
- Number of facilities with an out-of-date-inspection: 0

As of December 2018, a total of ten facilities are failing their most recent inspection, 7 of which are recent failures from FY18 and are being addressed by ECS through standard procedures outlined above. The three failing facilities that have carried over from 2017 (BMP ID 465, 487, 279) are currently in the process of follow-up coordination and/or elevated enforcement activity. The County expected to have the following steps taken for remediation as outlined in Table 1.

Table 1 - SWM Facility Enforcement Activities

Local BMP ID	First Fail Date	Latest Follow-up Inspection Date	Follow-up Actions
465	4/21/2014	11/7/2018	After attempts to contact property owner with notices of violation, it was finally determined HOA was responsible for corrections. Efforts were made to find HOA responsible party. 11/7/2018 Contacted HOA and coordinated onsite to discuss scope of work and formulated a plan to bring the facility back into compliance.
487	12/7/2016	4/28/2017	This site failed due to vegetation growing in the pond bottom and embankment. A reinspection in 2015 showed that several trees had been cut down from the pond bottom and embankments. At that time it was noted that a few cedars and several deciduous trees needed to be removed from the northwest (structural) embankment and within 25' of riser structure. During a second inspection in 2015, An extension was granted due to the work in progress. Several trees had been removed. During a reinspection in 2016, the inspector determined that some of the trees requiring removal were on an adjacent property. Adjacent property owner was contacted for compliance but compliance has not been achieved. Notices issued with fines to be issued December 2018 or January 2019 if site not found in compliance.
279	4/7/2017	11/26/2018	The County is in contact with the current owner after extensive research was required for identification. Steps towards compliance including funding appropriation and contractor selection are being taken for this costly repair.
337	4/2/2018		The County is in contact with the current owner after extensive research was required for identification. Steps towards compliance including funding appropriation and contractor selection are being taken for this costly repair.
531	4/12/2018		Change in ownership occurred and the County is in contact with the new owner. Next steps for compliance are underway.
639	6/14/2018		In contact with property owner and meeting has been scheduled with contractor to complete work. Compliance expected.

Local BMP ID	First Fail Date	Latest Follow-up Inspection Date	Follow-up Actions
123	6/14/2018		The facility is in design to be retrofitted by the County.
20218	5/9/2018	11/28/2018	The County is in contact with the current owner after extensive research was required for identification. Steps towards compliance including funding appropriation and contractor selection are being taken for this costly repair.
158	6/13/2018	11/19/2018	The County is in contact with the current owner after extensive research was required for identification. Steps towards compliance including funding appropriation and contractor selection are being taken for this costly repair.
533	9/12/2018		Contractor has been onsite to perform maintenance, but conditions have not allowed for work to be completed. Compliance expected.

All triennial inspections are recorded within a proprietary Permitting and Development Review application, Hansen Information Technologies v7.7. The appropriate data is exported from the database using select and parameter queries from an outside data management software. The subsequent data is then imported into the geodatabase, with a GEN_COMMENT to assist in identifying relevant FY18 inspections. Inspection data stored in the BMPInspections table represents all triennial inspections for the stormwater management program, including those outside the reporting term.

5.1.2 Implementation and Updates of 2000 Maryland Stormwater Design Manual

Frederick County implemented the stormwater management design policies, principles, methods, and practices of the 2000 Maryland Stormwater Design Manual. Subsequent changes were made to the Code of Maryland Regulations through the County's Stormwater Management Ordinance and its Design Manual, on June 5, 2001. It became effective July 1, 2001. The Ordinance amended the stormwater management regulations to adopt the 2000 Maryland Stormwater Design Manual Volumes I and II. The Board of County Commissioners adopted the County's Storm Drainage and Stormwater Management Design Manual effective January 2, 2003. This document helps address safe conveyance of runoff in channels, pipes, swales, culverts, etc. to stormwater management facilities and/or receiving channels.

The most significant improvements to the County's implementation of the MD 2000 design guidelines continues to be related to the participation with MDE in establishing the necessary changes in law and design guidelines to meet the Stormwater Act of 2007. Frederick County adopted the Stormwater Act of 2007 on May 4, 2010. Frederick County is committed to working with the development community and the State to improve the implementation of these regulations, and to achieve the best product for moving forward with the environmental site design implementation in an efficient manner.

Frederick County participates in workgroups, public meetings, design evaluations, and other steps involved in administering the stormwater management regulations and design guidelines. These discussions have also been used to assist staff in their evaluation of design approaches that are submitted for review in accordance with the MD 2000 design guidelines. Specifically in FY17, The County launched an expansion of the current approval process to include digital submissions. To implement this process, The County held several public meetings with the engineering community to expand final approved submissions to include digital submissions for approved improvement plans and as-built submissions. The new format, available at https://frederickcountymd.gov/3199/Applications-Checklists, enables the County's GIS department to receive a digital copy of all the required stormwater

management for permit reporting. The county continues its efforts to streamline the process of digital submissions, working with the engineering community to accomplish this goal. For further details of the outreach program, see section 6.3.

Evaluation: The County continues to maintain its stormwater management program in accordance with State stormwater management laws, including implementation of appropriate County ordinances. The County remains committed to implementing the latest stormwater management technologies while addressing the concerns of the development community. In FY18, the County's Environmental Compliance Section (ECS) completed all scheduled triennial inspections to adhere to maintenance requirements on all of its Stormwater Management Facilities and performed the necessary follow-up actions for failing facilities. The County has proven to its commitment in obtaining compliance through its follow-up and escalation procedures. The County continues to work with the development community and MDE to better understand the goals of the 2000 Maryland Stormwater Design Manual and the objectives of the changes associated with the Stormwater Act of 2007. Additionally, the County will continue to educate both the development community and the general public about how to determine the proper type of design for site-specific areas, as well as about facility installation timetables and maintenance issues. Staff will continue to work to address SWM earlier in the process to achieve the best product at the end of the process, as required by the changes associated with the Stormwater Act of 2007.

County BMP inspection information is included in the MDE_NPDES_MS4 geodatabase table: BMPInspections. These inspections include information on status, inspection date, and re-inspection status, if relevant.

5.2 Erosion and Sediment Control

Frederick County's Erosion and Sediment Control Program is administered by the Department of Permits and Inspections, Environmental Compliance Section (ECS). ECS utilizes inspectors that are specifically knowledgeable in Environmental Compliance inspection and enforcement to maintain an acceptable Erosion and Sediment Control Program in accordance with Environment Article, Title 4, Subtitle 1, Annotated Code of Maryland. The County's program was evaluated by MDE on October 20, 2017. A follow-up email from MDE requesting additional information was received December 11, 2017. A follow-up inspection with MDE occurred June 27, 2018 to address issues previously identified. The re-inspection found improvements to the County's Erosion and Sediment Control Program, and delegation was approved through June 30, 2020, provided as Appendix D.

ECS continues to receive budgetary support for equipment and automation, such as:

- Four-wheel-drive (4WD) vehicles,
- Full mobile connectivity through use of Dell laptop computers for field work,
- Hot-spots
- iPhone mobile cell phones with hard cases, and
- Hands-free devices are also provided for in-vehicle use.

Continued program enhancements include:

- Division of Planning and Permitting (DPP) engineering and inspection staff working closely with the local Soil Conservation Districts (SCDs) to conduct a joint approach to sediment control and stormwater management plan review. The mutual efforts to obtain Environmental Site Design to

the Maximum Extent Practicable (ESD to the MEP) should prove successful in producing better designed plans.

- ECS developing a plan and implementing quarterly meetings in calendar year (CY) 2018 with SCD to discuss plan review issues which will lead to better site control.
- DPP, and the County in general, striving to improve relationships with builders, developers, and related professionals by providing an open and interactive process in which every opportunity is given to receive input on ways to improve or enhance programs.
- ECS taking part in quarterly Permitting Outreach Meetings to establish relationships with the development community, and to inform and discuss ESD practices.
- DPP and ECS collaborating with Frederick County IIT and OSER staff in quarterly Development Review Outreach Meetings to implement digital submission standards for improvement and as-built plan submissions. For further details of the outreach program, see section 6.3.
- The Chief Environmental Inspector attending weekly meetings with the Permits and Inspections (P&I) Director, Permits Services Manager, and fellow Chief Inspectors of other disciplines. This interaction provides input and feedback from all parties and has proven to be extremely helpful and beneficial.
- Continuing to meet the needs of the state and the expectations of its citizenry to be environmentally sensitive and proactively protective of our natural resources, and
- Participating in professional development opportunities through seminars and workshops, hosted by MDE.

Erosion and sediment control data for FY18 are included in the MDE_NPDES_MS4 geodatabase. Related tables include ErosionSedimentControl and QuarterlyGradingPermits. Major features that are captured in these tables include ID, contact information, permits issued/active, number of inspections, number of fines, number of violations, and general comments.

5.2.1 Responsible Personnel Certification Classes

As originally reported in Frederick County's 2015 Annual Report, MDE confirmed that the RespPersonnelCertInfo table reporting requirement is eliminated.

5.2.2 Construction Site Data

Frederick County ECS provides quarterly reports of all grading activities disturbing more than one acre to MDE to cross reference against their NOI records. The data submitted includes site name, site owner and address, the amount of disturbed area, the local grading permit number, site location, and the type of development (e.g., residential, commercial, etc.).

Evaluation: Frederick County's Erosion and Sediment Control program is well established and is constantly striving for improvement. The County's goal is to establish itself as a model for which the State, other delegated jurisdictions, and its citizens may be proud. Frederick County continues to work closely and cooperatively with the local SCD and MDE. The cooperative nature of that relationship has resulted in several policy discussions designed to improve and enhance the sediment control program. Through its quarterly reports, the County met requirements for the electronic reporting of earth disturbances in the period of 7/1/17 to 6/30/18.

5.3 Illicit Discharge Detection and Enforcement Program

Frederick County continues to implement its Illicit Discharge Detection and Enforcement (IDDE) Program. The County's IDDE Program identifies potential illicit discharges in several ways: (1) through a systematic screening approach of outfalls that are more likely to demonstrate an elevated risk of illicit discharge, based on land use characteristics (the majority of sites were identified by this proactive approach); 2) through on-call (episodic) dry weather screenings of outfalls completed as a result of outfalls identified during as-built inspections, triennial maintenance inspections, or other County field work; (3) visual surveys of parcels with industrial and commercial land uses (hotspot surveys); and (4) through citizen and agency reporting mechanisms such as non-County agencies reporting spills to the National Response Center (NRC).

A complete report of Frederick County's Illicit Discharge Detection and Elimination Program from 7/1/17 to 6/30/18, including screening methods and results, is included as Appendix E. Discharge documentation for investigation follow ups and remediation can be found in Appendix F.

5.3.1 Systematic Outfall Field Screening

Using the new protocol submitted on December 29, 2017, the County contracted with KCI Technologies, Inc. to conduct IDDE screenings (i.e., physical inspections and water quality testing) during the reporting period. In accordance with the revised protocols, field inspectors noted evidence of dry weather flows, if present, at all outfalls selected as target sites, as defined below.

If flowing water was present in the network, under otherwise dry conditions, inspectors documented conditions relevant to the discharge, and sampled the effluent for a defined set of chemical constituents, including ammonia, conductivity, detergents, phenols, pH, copper, and chlorine. Detergents, phenols, copper, and chloride are tested using a Hach Storm Drain Test Kit; ammonia is tested using a separate Hack test kit for Ammonia-nitrogen; conductivity and pH are measured using a multiparameter probe. If analytical results or field inspections indicated potential illicit connections, the conveyance network contributing to the outfall, and surrounding areas were investigated to identify possible sources of pollution. A follow-up sampling event was conducted within 24 hours to retest the parameters that had exceeding screening criteria in the initial test. If the second assessment also indicated test results out of the accepted ranges, KCI staff alerted County personnel via a written report of the findings. County staff then contacted the landowner or responsible party regarding the violation and the corrective actions.

In the 2018 reporting period, the following areas within the County were targeted for systematic screenings: the 1800–5800 blocks of Urbana Pike (Maryland Route 355), the 5200–5800 blocks of Buckeystown Pike (Maryland Route 85), and a larger extent of the County ranging from Liberty Road, Frederick, MD to Sabillasville, MD, and Fingerboard Road, Monrovia, MD to Clarksburg, MD. These screenings prioritized selected hotspot locations for the visual surveys that were identified in FY15, FY16, and FY17 as potential to severe hotspots. A total of 105 outfalls were screened within these areas with approximately one-third occurring in each identified location.

Data pertaining to Frederick County's IDDE program are included in the IDDE table in the MDE_NPDES_MS4 geodatabase.

5.3.1.1 Results of *Systematic Outfall Field Screening*

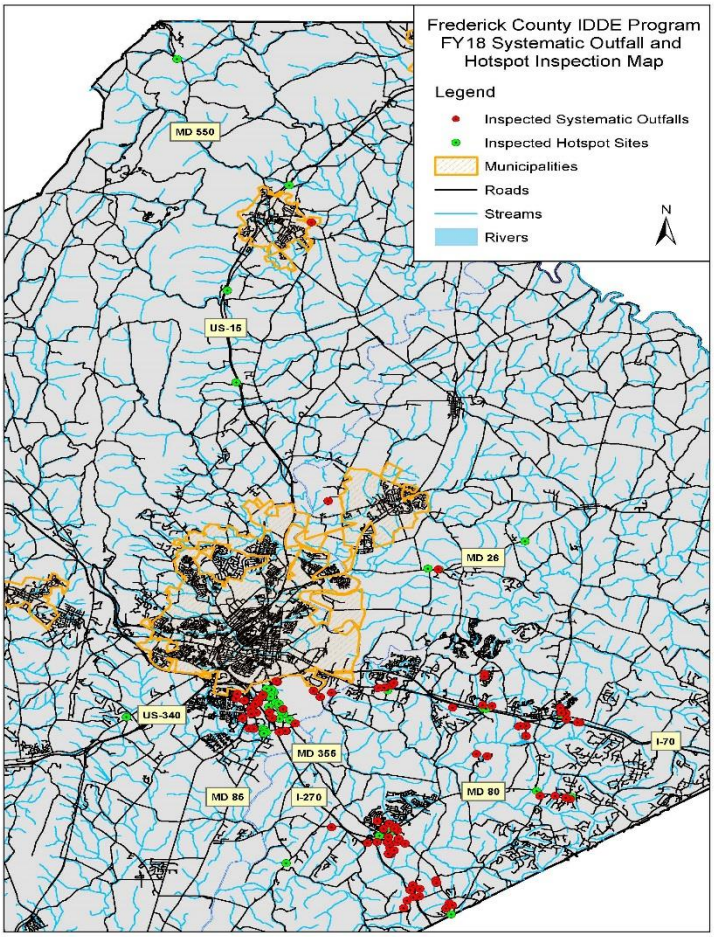
Figure 5 below illustrates the locations of sites successfully screened for outfall investigations, identified through the systematic approach. Summaries of KCI's screenings are included in the Illicit Discharge Detection and Elimination Program report in Appendix E.

Of the 106 systematic inspection screenings completed, eleven had dry weather flow during the initial screenings and were subsequently sampled. One confirmed illicit discharge was identified at outfall OF238, located on the property of A&S Sales, 9834 Liberty Road, Frederick, MD. Ammonia levels exceeded the corresponding illicit discharge action levels during both the initial sampling (1.2 mg/l) and resampling (1.2 mg/l) events. The County investigated A&S Sales again although the owner continued to assert that the pipe runs under the property. Versar was employed to conduct a second, on-call (episodic) screening of the outfall in conjunction with screening a cistern found behind the A & S Sales property. Results for these tests identified elevated levels of detergent and below threshold levels of ammonia from the outfall, but parameters were not exceeded at the cistern, ruling out A & S Sales. The County identified a grated inlet holding water behind the house adjacent to the A & Sales property located at 9906 Liberty Road, Frederick, MD, 21701, as well as an outhouse directly behind the garage, and a spring seep 100 feet to the right of the property. Furthermore, conversations with the homeowner asserted that the backyard is prone to flooding during high rain events around their septic field. Dye testing and televising of the pipe system for the house and outfall in question was attempted in order to try to find the source of the high levels of ammonia and detergent. The televising was unsuccessful due to debris build up within the pipe system of the outfall and the grated inlet, while dye testing was also inconclusive due to numerous rain events during the testing period. The County has exhausted all known options in trying to track down the source of the ammonia discharge.

In its review of the 2017 Annual Report, MDE recommended, “The County test all parameters during reinspections in order to complete a thorough investigation.” The County has noted the recommendation and will implement it in the FY19 screening efforts. MDE also noted that, “air temperature data [is] required for all screenings and regardless of dry weather flow.” The County has included all air temperature data for this reporting year in the IDDE table in the MDE_NPDES_MS4 geodatabase.

Finally, in their review, MDE stated, “The County’s new protocols stipulate that a chemical test exceeding a threshold would be retested between four and 24 hours of the initial inspection to verify results. The County’s data indicate that reinspections of the two outfalls were conducted approximately one to two weeks after initial screening. MDE requests that the County consistently implement its protocols to improve the probability of identifying an intermittent illicit discharge.” The County would like to comment that the delay in reinspection of the two outfalls was a result of rain events between the first and second testing thereby negating the 72-hour dry weather requirement. As such, the County requested their contractors to return after the next available 72-hour dry weather period to initiate retesting. Moving forward, the County will ensure that their inspectors take weather into consideration prior to initiating any initial screenings on a particular day in order to consistently implement the protocols.

Figure 5 - Outfalls successfully screened in the FY18 period



5.3.2 Episodic Outfall Field Screening

If dry weather flow is noted at an outfall during any other County activity, such as Stormwater Management Structure "As-Built" inspections, triennial maintenance inspections or watershed assessments, the County's Office of Sustainability and Environmental Resources (OSER) is notified within 24 hours. OSER then sends an investigation request to Versar, Inc. to conduct an IDDE screening in the same manner as that detailed above in section 5.3.1, and in *Frederick County's Illicit Discharge Detection and Elimination: Response, Inspection, and Reporting Protocols* (KCI Technologies, Inc., 2017).

Versar conducted IDDE screenings at two outfalls that were observed to have dry weather flows. One illicit discharge was identified and is associated with the systematic screening results of outfall OF238 detailed in 5.3.1.1. The second outfall was identified by one of the County's consultants during the watershed assessments. Summaries of these screenings are included in Appendix E.

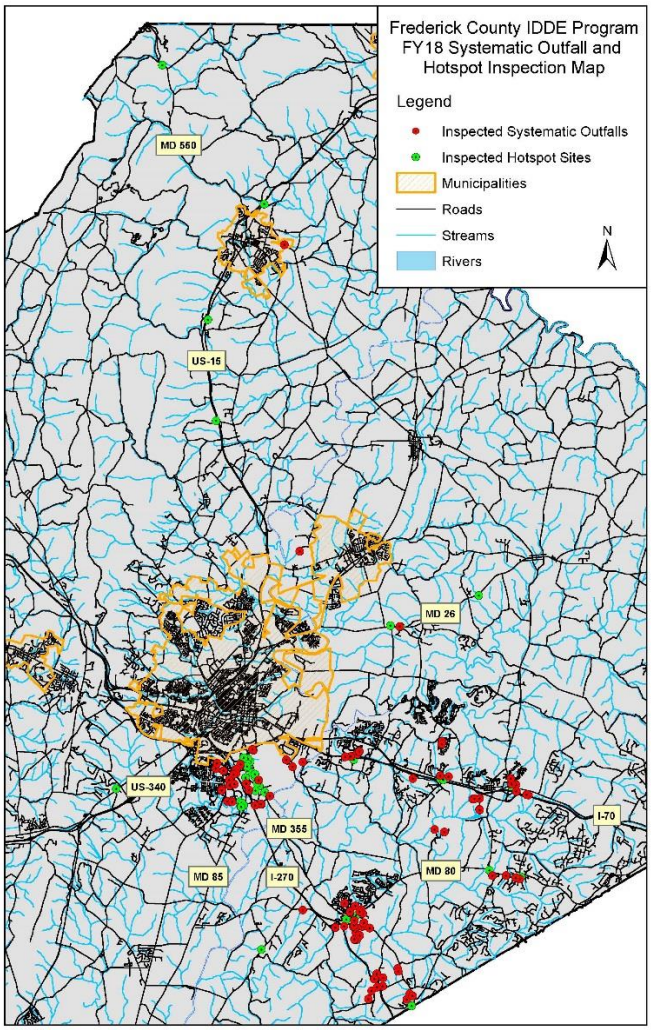
Data pertaining to Frederick County's IDDE program are included in the IDDE table in the MDE_NPDES_MS4 geodatabase.

5.3.3 Visual Surveys

As part of the IDDE program, there is a requirement to conduct annual visual surveys of commercial and industrial areas for discovering, documenting, and eliminating pollutant sources. In FY18, surveys were chosen based on the criteria listed in *Frederick County's Illicit Discharge Detection and Elimination: Response, Inspection, and Reporting Protocols* (KCI Technologies, Inc., 2017) and based on MDE's FY16 Annual Report review stating that sites identified as hotspots should be visited on a more frequent basis. Additionally, it has been noted that the hotspot classifications (potential, confirmed, or severe) from previous reporting years were misleading. As a result, the hotspot site investigation form has been updated, in conjunction with Frederick County's IDDE Program protocol update, to classify a property as Not a Hotspot, a Hotspot but without violations, or a hotspot with violations to better identify potential pollution to stormwater at commercial and industrial properties.

Sites surveyed during FY18 are identified in Figure 6, and a copy of the updated Hotspot Site Investigation Jr. form used to evaluate sites is included in Appendix G.

Figure 6 - Commercial and Industrial Visual Inspection Locations, June 2018



5.3.3.1 Results

Visual surveys were conducted between April 30 and June 13, 2018 at 58 of the 119 total sites to be visited throughout the 5-year permit. Table 2 identifies the location and date of each survey.

The surveys identified eleven facilities as not in service, twenty-nine facilities as hotspots but without violations, and sixteen facilities as hotspots with violations. Notices were issued to the facilities with violations outlining the survey results, and indicating the facilities' status. The notices included recommendations to correct the deficiencies and informed the owner that a re-inspection was to be conducted to ensure all recommendations had been taken into account.

Follow-up inspections revealed all identified businesses improved their practices allowing all but three of the businesses to be reclassified as in compliance and without violations. The remaining hotspot sites with violations include TJ's Roadhouse; Laurienzo's Brick Oven Cafe; and Olive Garden. All sites have been forwarded to the Health Department for follow up remediation due to violations associated with their grease traps and waste management areas.

Table 2 - Businesses Visited in FY18

Company Name	Address	Initial Inspection Hotspot Status	Follow-Up (Y/N)	Follow-Up Reason	Final Inspection Hotspot Status	Notes
April 30, 2018						
TIRES PLUS TOTAL AUTO CARE	7381 GULIFORD DR	W/O Violation	N	-	W/O Violation	-
K AND K AUTOMOTIVE	5850 URBANA PIKE	W/ Violation	Y	Excess Trash and open liquid containers	W/O Violation	Containers removed, or sealed and stored under cover.
CHURCHILL AUTO CARE	5733 BUCKYESTOWN PIKE #B	W/O Violation	N	-	W/O Violation	-
LUBE CENTER INC	5715 BUCKEYSTOWN PIKE	W/O Violation	N	-	W/O Violation	-
POPEYE'S CHICKEN AND BISCUITS	5721 BUCKEYSTOWN PIKE	W/O Violation	N	-	W/O Violation	-
PRECISION TUNE AUTO CARE	5831 BUCKEYSTOWN PIKE #H	W/O Violation	N	-	W/O Violation	-
SUBWAY	7400 GUILFORD DR	W/O Violation	N	-	W/O Violation	-
May 2, 2018						
AUTO RONNIE	11801 FINGERBOARD RD # 17	W/O Violation	N	-	W/O Violation	
BLUE SKY BAR & GRILL	10519 OLD NATIONAL PIKE	W/O Violation	N	-	W/O Violation	
DOMINICS	11791 FINGERBOARD RD	W/ Violation	Y	Dirty oil filter container and greasy pans left outside	W/O Violation	Oil filter container cleaned and pans removed
DOMINO'S PIZZA	11717 OLD NATIONAL PIKE # 18	W/O Violation	N	-	W/O Violation	Team Maryland Franchise
DYNAMIC AUTOMOTIVE	10601 OLD NATIONAL PIKE	w/ Violation	Y	Open used antifreeze tank and evidence of spill	W/O Violation	Tank sealed and evidence of spills cleaned

Company Name	Address	Initial Inspection Hotspot Status	Follow-Up (Y/N)	Follow-Up Reason	Final Inspection Hotspot Status	Notes
GREEN VALLEY CARRY OUT	11801 FINGERBOARD RD # 8	W/ Violation	Y	Dirty Grease trap area	W/O Violation	Closed until further notice at the time of follow up inspection
QUALITY COLLISION REPAIR INC	5829 MAINS LN	W/O Violation	N	-	W/O Violation	-
TEAM MARYLAND	11717 OLD NATIONAL PIKE # 18	W/O Violation	N	-	W/O Violation	See Domino's Pizza
WILCOMS INN	11234 FINGERBOARD RD	W/O Violation	N	-	W/O Violation	-
YOUNG CHOW	11801 FINGERBOARD RD # 4	W/ Violation	Y	Dirty grease trap area and evidence of spill	W/O Violation	Grease trap area cleaned
May 7, 2018						
P & M TRANSMISSIONS INC	17040 SABILLASVILLE RD	W/ Violation	Y	Tires and evidence of leaking stored cars	W/O Violation	Tires tarped and spills cleaned
RODDY CREEK AUTO & STORAGE	7702 RODDY CREEK RD	W/ Violation	Y	Scrap metal and evidence of spill on oil tank during transfer	W/O Violation	Now: Complete Auto Diagnostics, scrap metal removed and oil tank clean
FREDERICK PERFORMANCE CTR	6830 PUTMAN RD #C3	W/O Violation	N	-	W/O Violation	-
May 14, 2018						
IHOP RESTAURANT	5277 BUCKEYSTOWN PIKE	W/O Violation	N	-	W/O Violation	-
AMERICAN IRON SPEED AND CYCLE	5400 YUKON CT #400	W/ Violation	Y	Dirty trash area, shared with plaza	W/O Violation	Now: RKT Performance; trash area swept
EUROTECH MOTORSPORTS	5400 YUKON CT #400	W/ Violation	Y	Dirty trash area, shared with plaza	W/O Violation	Now: RKT Performance; trash area swept
OLIVE GARDEN ITALIAN RESTAURANT	5609 SPECTRUM DR	W/ Violation	Y	Broken grease lid	W/ Violation	Forwarded to the Health Department for further enforcement
UNO CHICAGO GRILL	5449 URBANA PIKE	W/ Violation	Y	Dirty grease trap area, and damaged, leaking dumpster	W/O Violation	Dumpster replaced, and booms placed around the grease trap.
MIKE'S AUTO BODY COLLISION	12917 CATOCTIN FURNACE RD	W/O Violation	N	-	W/O Violation	-
CHIPOTLE MEXICAN GRILL	5223 BUCKEYSTOWN PIKE	W/O Violation	N	-	W/O Violation	-
MEDITERRANEAN GRILL	5221 BUCKEYSTOWN PIIKE	W/O Violation	N	-	W/O Violation	-
NOODLES & CO	5221 BUCKEYSTOWN PIKE	W/O Violation	N	-	W/O Violation	-

Company Name	Address	Initial Inspection Hotspot Status	Follow-Up (Y/N)	Follow-Up Reason	Final Inspection Hotspot Status	Notes
PANDA EXPRESS	5281 BUCKEYSTOWN PIKE	W/O Violation	N	-	W/O Violation	-
ROMANO'S MACARONI GRILL	5201 BUCKEYSTOWN PIKE	W/ Violation	Y	Dirty grease trap placed over unknown drain inlet	W/O Violation	Grease trap and pad area cleaned. Trap moved down slope from drain and drain is bermed with absorbent sock
SENOL OZ MECHANIC	5608 BUCKEYSTOWN PIKE	W/O Violation	N	-	W/O Violation	Now: Evergreen Auto & Truck Repair
WILD BERRIES BAKERY & CAFÉ	5219 BUCKEYSTOWN PIKE	W/O Violation	N	-	W/O Violation	-
CHOPSTICKS EXPRESS	5500 BUCKEYSTOWN PIKE # 412	W/O Violation	N	-	W/O Violation	-
KELSEY'S REPAIR & SVC CTR	2752 PARK MILLS RD	W/ Violation	Y	Piles of scrap metal	W/O Violation	Scrap metal was properly disposed of
MOCHA ISLAND CAFE	5500 BUCKEYSTOWN PIKE # 816	W/O Violation	N	-	W/O Violation	Now: Crepes & Beyond
SEARS AUTO CTR	5500 BUCKEYSTOWN PIKE	W/O Violation	N	-	W/O Violation	-
SUBWAY	5500 BUCKEYSTOWN PIKE # 810	W/ Violation	Y	Dirty trash area	W/O Violation	Trash area shared with portion of mall; trash area swept
SUSAN MAY	5640 URBANA PIKE	W/ Violation	Y	Buckets with grit outside and empty aluminum cans stored uncovered	W/O Violation	Also known as May's Seafood Restaurant; buckets and cans removed
May 21, 2018						
MATSUTAKE SUSHI & STEAK	5225 BUCKEYSTOWN PIKE	W/O Violation	N	-	W/O Violation	-
HOWARD COUNTY EQUIPMENT	9640 LIBERTY RD	W/ Violation	Y	Poor waste management, exposed open bags of salt	W/O Violation	Bags of salt removed, waste management areas cleaned
A & S SALES	9834 LIBERTY RD	W/O Violation	N	-	W/O Violation	-
MC DONALD'S	3406 URBANA PIKE	W/O Violation	N	-	W/O Violation	-
BURGER KING	3363 URBANA PIKE	W/O Violation	N	-	W/O Violation	-
WAFFLE HOUSE	8906 FINGERBOARD RD	W/O Violation	N	-	W/O Violation	-
June 8, 2018						

Company Name	Address	Initial Inspection Hotspot Status	Follow-Up (Y/N)	Follow-Up Reason	Final Inspection Hotspot Status	Notes
T J'S ROADHOUSE	11037 LIBERTY RD	W/ Violation	Y	Dirty grease trap and waste management area	W/ Violation	Forwarded to the Health Department for further enforcement
June 13, 2018						
LAURIENZO BRICK OVEN CAFE	1896 URBANA PIKE	W/ Violation	Y	Leaking dumpster and debris around area	W/ Violation	Forwarded to the Health Department for further enforcement

5.3.4 Citizen and/or Agency Reporting

Information about how citizens can report illicit discharges is available online on Frederick County Government's Citizen Request Tracker web page under "Water Pollution Issues":
http://www.frederickcountymd.gov/requesttracker.aspx

A reporting link is also available at:
https://www.frederickcountymd.gov/reportwaterpollution

During the 2017–2018 reporting period, fourteen potential illicit discharges were reported to the County through external reporting mechanisms. A detailed report on one of the investigations is provided in Appendix E, as it was investigated with support from Versar, Inc. The remaining potential illicit discharges were investigated and resolved using OSER staff, MDE, and state agencies. Follow up documentation for County resolved investigations are included in Appendix F.

IDDE Report #1 – Lake Marian

A complaint was issued through the County's Online reporting system stating that there was sediment and erosion runoff into Lake Marian and inadequate controls for the Woodbridge V development construction. The complaint was forwarded to Frederick County's Erosion and Sediment Control (ECS) who performed a site visit. The visit identified a lack of controls and additional failing controls. The issues were repaired or installed within the week, and a new plan was submitted for proper permitting.

IDDE Report #2 – Hollow Road

OSER staff was contacted to report erosion and sediment running off a home construction site at Hollow Road, Middletown, MD. The report was forwarded to Frederick County's Erosion and Sediment Control (ECS) who conducted a meeting with the builder. A silt fence was installed onsite following the meeting.

IDDE Report #3 – Kellerton

During a stream sampling, an employee from MD Department of Natural Resources (MD-DNR) noted some construction runoff entering the stream and identified the source as the Kellerton development construction site in Frederick, MD that was having issues with one of their sediment basins. Documentation was provided asserting that the contractor repaired the draw down device in the basin.

IDDE Report #4 – A&S Sales

The County received a complaint that granite was dumped in and along Addison run just off of their shared driveway. MDE was contacted to conduct a joint investigation. Upon investigation, the granite was noted as being used to stabilize the stream bank that crosses under the shared driveway. However, MDE directed the granite be removed and replaced with rip rap under appropriate permitting procedures. The granite was removed by the end of the month, and further details of the investigation can be found in the MDE Waterway Construction Report for the Gardner/Menconi Shared Driveway included in Appendix F.

IDDE Report #5– Jefferson School Property

A complaint was filed that someone was illegally dumping miscellaneous items, materials, and appliances over the guard rail along Horine Drive, and on the Jefferson School Property. MDE and the Health Department were contacted regarding the nuisance waste dumping. The Health Department was able to work with the property owner to clean up any and all materials.

IDDE Report #6 – HSA, Inc.

County staff received a complaint from a property manager stating that his tenant dumped a petroleum-based product on the ground near a drinking well. A joint inspection was conducted with Frederick County's Well & Septic Department of the Health Department. Follow up actions required the involvement of MDE's Oil Control Program (OCP) who directed the property manager on the proper remediation procedures, which included removing the contaminated soil and reseeding it with 10-10-10 mix. The directed remediation actions were taken and documentation was provided.

IDDE Report #7 – Summit Lake Camp

The County received a complaint regarding the smell of oil and a sheen in Owens Creek while conducting a stream education lesson at Summit Lake Camp. An investigation with the general manager of the camp identified that one of their underground storage tanks (USTs) used for heating oil had a leak and discharged through the waterline into a spring house. Since he discovered the leak he drained the oil from the tank and initiated conversations with MDE. OSER staff noted that the sheen in Owens Creek was a result of natural bacterial oils, and the general manager asserted that the spill had been contained in the spring house. OSER also observed the work in progress to fix a septic pump leak. Following the investigation, OSER contacted the Health Department, Well & Septic, and MDE's Oil Control Program (OCP). The Health Department issued a letter requesting remediation, and MDE conducted a second inspection accompanied by OSER staff. The UST was removed, the septic problem was resolved, the oil was removed from the spring house, and the soils were tested and excavated. A copy of the Health Department letter, OCP's initial report, and OCP's Request for Work Plan is included in Appendix F.

IDDE Report #8 – Green Valley Shopping

A report was received by the County from MDE stating that a well driller had allowed bentonite to reach the storm drain system and discharge out of a culvert that outlet to residential backyards in Monrovia, MD. Upon receiving the report and performing a site investigation, OSER identified that the storm drain inlet had been cleaned out of the drilling material, but that material still remained in the culvert. A courtesy notice was sent to the driller to indicate where the culvert was located and that there was

additional material that needed to be removed. The remaining material was cleared from the culvert within a week of receipt of the letter.

IDDE Report #9 – Brunswick WWTP

Environmental Compliance Section (ECS) staff received a report that trash and silt had been running into a tributary of the Potomac River at the Brunswick Wastewater Treatment Plant (WWTP). The complaint was forwarded to The Compliance Program Division at MDE. The WWTP was required to apply for the Industrial Discharge permit and install best management practices (BMPs).

IDDE Report #10 – Eyler's Valley Road

OSER received a complaint that tires had been dumped in Little Owen's Creek off of Eyler's Valley Road in Thurmont, MD. The same complainant had contacted various agencies as well including MDE, and DPW's Highway Operations. The tires were removed from the stream within the month.

IDDE Report #11 – Opposumtown Pike

A citizen reported that current construction along his road at Opposumtown Pike, Frederick, MD was causing debris to runoff onto his property and into Little Tuscarora Creek. The location of the construction was located within the City of Frederick Phase II boundaries. As such, the report was forwarded to the Soil Conservation District (SCD) in Frederick City for proper investigation and enforcement. The inspector at SCD asserted that he met with the builders and that they were able to clean up the stream area. The SCD reports are included in Appendix F.

IDDE Report #12 – Citizen's Care and Rehabilitation Center

On March 30, 2018, the County's TransIT Services identified a brown discharge into their stormwater pond during a quarterly routine inspection for their General Discharge permit (12-SW). The discharge was reported to OSER to identify the source. OSER staff noted that the storm drain inlet to the pond was located across the street at Citizen's Care and Rehabilitation Center (CCRC) downslope of their dumpster pad. Upon investigation, the dumpster was being removed; evidence of staining leading to the storm drain and residue under the dumpster led staff to believe that the dumpster was leaking and thus the source of the discharge. OSER staff worked with DPW staff to contact their spill responder, have the concrete pad cleaned, the dumpster replaced, and absorbent booms placed around the pad on the downslope side nearest the inlet. Absorbent mats were also placed in the inlet, and a gutter curb was built in the same location as the booms were placed.

IDDE Report #13 – Fountaindale Road

During a site visit for the Catoctin Creek Watershed Assessment, County staff identified a PVC pipe with dry weather flow discharging to a stream near Fountaindale Park. Versar's field staff investigated conditions at the site on May 3, 2018. During the investigation, field staff noted an odorless and colorless flow, and conducted water quality testing on the discharge. No illicit discharge parameters were exceeded, and the pipe was identified as being associated with a lawn drain and groundwater flow. A detailed report on this investigation is available in Appendix E.

IDDE Report #14– Samhill Court Estates

A citizen reported construction debris was being dumped by a guardrail along Samhill Drive in Mounty Airy, MD. The Health Department was forwarded the complaint and they were able to work with the HOA to have the trash removed.

5.3.5 Spill Response

In FY18, Frederick County continued to respond to all citizen complaints of illegal dumping and spills, as part of the County's overall Illicit Discharge Detection and Elimination program. OSER has developed a standard set of procedures that maintain consistency in reporting and referrals for minimal internal transfers, as part of the County's IDDE protocol. If a spill occurs within the MS4 boundary, and is not a hazardous material, sanitary sewer overflow, or septic system discharge, OSER will respond to the event and direct the property owner or responsible party on proper reporting and remediation measures. Follow-up inspections are conducted with varying timeframes based on the severity of the spill, documented internally, and reported to MDE, as necessary. Any spills reported to OSER are described above in section 5.3.5.

Hazardous spill calls are forwarded to 911, where first responders are trained and equipped to handle such situations. For hazardous spills requiring evacuation, the Department of Emergency Preparedness has updated its Emergency Operation Plan, which includes annexes for emergency evacuation; triggers, escalations and evacuation plans; and HazMat response. The County also has a reverse 911 system to perform targeted calling based on georeferenced locations for localized problems like hazardous spills. The Fire Department coordinates the Local Emergency Planning Committee, required under the Superfund Amendments and Reauthorization Act (SARA) Title III.

Spills are also reported to the National Response Center (NRC). OSER will only report spills to the NRC with the understanding that the responsible entity has not already done so or plans to do so. Records for Frederick County in FY17 are included in the table below (Table 3; USCG, 2017).

Table 3 - Reported Spills in Frederick County FY18

Date	Reported By	Address/Location	Material Spilled	Suspected Party	Notes/Comments from NRC
7/24/2017	National Response Center	4937 Green Valley Rd, Monrovia, MD	Unknown Oil	Unknown Auto Shop	Caller is reporting that an auto shop has oil that has been dumped on the grounds around the shop. Caller did not witness dumping, however, caller saw evidence of spilled oil on the ground.
11/11/2017	National Response Center	259, East 7th St, Frederick, MD	Milk	Dairy Made Dairy	Caller is reporting a milk spill from a busted line that entered a storm water drain.

Date	Reported By	Address/Location	Material Spilled	Suspected Party	Notes/Comments from NRC
1/8/2018	National Response Center	12641 Creagerstown Road, Thurmont, MD	Oil, Misc: Motor	Red Rocks Farm	Caller stated there was a spill of materials from 55 gallons drums at a farming facility due to unknown causes. Caller stated there was a barn involved with this incident.
2/19/2018	National Response Center	1304 West Patrick St, Frederick, MD	Body Deodorant	Unknown	Caller reported an individual threw a white powder at an m & t bank ATM drive through machine. The powder was determined to be a body deodorant.
2/25/2018	National Response Center	5129 S Clifton Rd, Frederick, MD	Unknown Oil	Unknown	Caller is reporting the discharge of an unknown quantity of an unknown oil on i70 beginning from i-270 to MD-40 and turned onto S Clifton St.
3/12/2018	National Response Center	1434 Hughes Ford Rd, Frederick, MD	Hydraulic Oil	Aspen Tree Expert	Caller is reporting the 8 gallon discharge of hydraulic oil to gravel due to equipment failure on one of the lift trucks.
3/16/2018	National Response Center	Famhouse At The End Of Pleasant Walk Road, Meyersville, MD	Construction Debris, Trash, Drums of Chemicals	Private Citizen	Caller reported trash, drums of chemicals, used motor oil, and construction debris are being dumped into a pit and buried. This has been ongoing for approximately 2 years.
5/11/2018	National Response Center	5115 Pegasus Ct, Frederick, MD	Unknown Paint	Unknown	Caller stated there is a two member crew power spraying paint outside. Caller stated the materials are going into the air as there is no recovery system or paint booth. Caller stated sheets of an unknown flat materials are being painted.
5/14/2018	National Response Center	Frederick, MD	Oil, Diesel	USALCO Trucking	Caller stated due to debris in the roadway the saddle tank of a tractor trailer was struck causing a release of diesel fuel onto the roadway, soil and a berm area.

Date	Reported By	Address/Location	Material Spilled	Suspected Party	Notes/Comments from NRC
6/19/2018	National Response Center	Rt 340 Westbound At Lander Rd, Frederick, MD	Oil, Fuel	Rocco Building Supplies	Caller is reporting the 40 gallon discharge of diesel fuel from a saddle tank due to operator error when the driver jackknifed the truck and trailer.
6/20/2018	National Response Center	Mp: Ba75, Brunswick, MD	Oil, Diesel	CSX Railroad	Caller is reporting a release (historical) of diesel fuel onto the ballast from an unknown source.

Source: (USCG, 2017, 2018 (Current))

5.3.6 Program Evaluation

Frederick County's Illicit Discharge Detection and Elimination program continues to put forth effort in identifying, eliminating, and documenting potential illicit discharges. The Office of Sustainability and Environmental Resources fulfilled its permit requirements for FY18: 108 dry weather screening inspections were conducted meeting the 100 outfall requirement, including 106 as part of the systematic screening, and two as a result of the citizen reporting program. In addition to systematic screenings, ECS continues to check for dry weather flow at their triennial stormwater inspections. 58 businesses were screened through the visual surveys of parcels with industrial and commercial land uses; and 14 citizen reports of violation were investigated and eliminated.

Data for 2018 pertaining to Frederick County's IDDE program are included in the IDDE table in the MDE_NPDES_MS4 geodatabase.

5.4 Litter and Floatables Annual Report

Frederick County recognizes that increases in litter discharges to receiving watersheds have become a growing concern within Maryland. The County has evaluated current litter control programs, potential sources, and methods for elimination and opportunities for improvement. The County also has enhanced its public outreach program to address Litter and Floatables issues.

5.4.1 Potential Sources

An Assessment of Potential Sources was completed for the 2015 half-year Annual Report. An assessment of data from several sources, to include Stream Corridor Assessments (SCA); restoration monitoring; and the Frederick County Stream Survey, determined that trash problems are not present along the entire lengths of stream networks in Frederick County, but instead may be attributed to trash "hotspots," or dumping sites since the problems are present in isolated locations. The dumping sites that received a severe trash rating in the SCA were located within agricultural, resource conservation, low density residential, and village center land use types.

5.4.2 Methods for Elimination

Based on the 2015 Assessment of Potential Sources, OSER staff uses the following strategies as methods to eliminate litter and floatables throughout Frederick County's MS4:

- Their Public Outreach Program, and
- Litter Control Programs

5.4.3 Public Outreach Program

In order to address litter control problems, and to develop a litter and floatables public education and outreach program in Frederick County, OSER is following the goals and objectives from The Strategic Plan to Improve Water Quality through Public Outreach in Frederick County, Maryland, published in November 2003. As part of litter prevention outreach, OSER staff is working with and supporting organizations that provide outreach and coordinate large and small-scale cleanups in Frederick County.

Developed in 2015, Frederick County's litter and floatables public education and outreach program includes the dissemination of outreach materials to the public that communicate the level of trash in Frederick County's streams, discourage littering behavior, and encourage individuals or groups to participate in trash cleanups. OSER staff developed materials specific to Frederick County and has incorporated additional litter prevention outreach materials into current outreach efforts required under the public education section of the permit (PART IV.D.6). Additional education and outreach are being implemented through print and digital media, advertisements, press releases, newsletter articles, and a resource webpage with the promotion of local trash cleanup events to encourage public participation. OSER staff has developed an online webpage at https://www.frederickcountymd.gov/7564/Litter-and-Floatables to be used as a resource for promoting participation in existing trash cleanup events and coordination of new cleanups, and for educating the public on litter prevention in Frederick County. The webpage includes links to the websites of other organizations who host cleanup events, such as the Alice Ferguson Foundation.

The Alice Ferguson Foundation (AFF) has developed a Regional Litter Prevention Campaign toolkit as part of their Trash Free Potomac Watershed Initiative. The Regional Litter Prevention Campaign toolkit contains resources available for Frederick County to use for the County's public education and outreach program. The toolkit materials include advertisements and visuals, communication pieces, and community outreach pieces. OSER staff uses materials from the AFF toolkit that are appropriate for Frederick County's outreach efforts to reduce littering.

The Green Leader Challenge, one of 3 sub-challenges that make up the overall Green Homes Challenge, helps County residents adopt environmentally friendly practices. In the Green Leader Challenge, there are eleven (11) actions that educate and motivate Challenge participants to eliminate waste and litter, recycle, and compost. To date, nearly 2,230 individuals have registered with the overall Green Homes Challenge and 295 are self-certified as Green Leaders.

The Frederick County Department of Solid Waste Management (DUSWM) coordinates a recycling education and outreach program that promotes recycling through community engagement, print and digital media, school presentations, and special events. The County has an overall recycling and waste diversion rate of 46% (MDE's County Recycling Rates by Commodity in Tons for Calendar Year 2016 from https://mde.maryland.gov/programs/LAND/RecyclingandOperationsprogram/Documents/2016%20County%20Rates.pdf) – one of the higher diversion rates in the state – and has established a goal of achieving a 60% waste diversion rate by 2025. Four times per year, DSWM sends out useful information on the County's recycling program, including important updates, interesting facts, and tips for creating less waste. The Department of Solid Waste Management has information available on its website http://www.frederickcountymd.gov/5634/Waste-Management-Trash-and-Recycling for County

residents on various landfill programs, such as disposal of household hazardous wastes, recycling, source reduction, and backyard composting. The continuation of current efforts in this program will be sufficient in meeting the permit requirements for recycling education and outreach, and achieving the County's recycling goals.

Recycling Outreach (conducted by the Recycling Outreach Program Coordinator under DSWM) is ongoing and includes:

- Community Engagement: meet with community groups and provide speaking/presentations; present displays at public events
- Digital Media: Facebook; e-newsletter; mobile app (Recycle Coach)
- Print Media: direct mail; newspaper and other advertising media (bus, billboard, etc.); press releases; articles for publications
- Schools: work directly with Frederick County Public Schools (FCPS) to increase awareness among staff and students of waste and recycling issues; include private and home schools in any contests or promotions
- Special Events: conduct contests, drop-off events, award programs and other campaigns to bring attention to and increase support of County programs and goals

The first phase of the Solid Waste Management Options Study was initiated to develop a long-term solid waste management strategy that is informed by and inclusive of county residents. Frederick County's Solid Waste Steering Committee held a series of workshops between November 2015 and February 2016 collectively called the "What's Next? Solid Waste Public Forums". The framework for evaluating the options generated by the public was built around criteria in the Maryland Recycling Act and Zero Waste Plan. Options recommended for analysis in phase 2 of the study include:

- Waste reduction program at county schools – Collecting food waste for composting, increasing recycling efforts, etc.
- Three-bin system for collection – waste collection would separate trash, recycling, and food waste.
- Food waste collection from restaurants – Commercial food waste would be collected for composting.
- Community-scale, decentralized composting program – Food waste and other organic material would be collected for composting at small facilities. This could serve as a pilot for a large-scale operation.
- Development of a large-scale, centralized composting facility – A central countywide facility would process separated organic materials: primarily food waste, yard waste, and non-recyclable paper.

During Phase 2 of the study, a detailed analysis was completed of the viability of each recommended option from Phase 1, both individually and in combination with other appropriate options. The Phase 2 Report was completed (issued) June 30, 2017. Prior to completion, the Phase 2 Report was presented at a County Executive Town Hall meeting on June 2, 2017 and to County Council on June 27, 2017. Findings from the Phase 2 report will serve as a roadmap for the county to achieve recycling and waste diversion goals over the next ten years.

5.4.4 Litter Control Programs

The following litter control programs throughout Frederick County are presented below.

- Alliance for the Chesapeake Bay "Project Clean Stream" - April 14, 2018

  - The event is an annual watershed-wide effort to clean up trash. The Green Leader Brigade participated in an event to clean up trash along Catoctin Creek.
- Frederick County "Adopt-a-Road" Program – **Ongoing**
  - The Office of Highway Operations coordinates an "Adopt-a-Road" Program to help control litter along County roads. Approximately 93.72 miles of road are maintained by 42 groups across the County. From July 2017 through June 2018, a total of 3.06 tons of trash and 137 tires were removed through this program.
- Road Maintenance Activities - **Ongoing**
  - The Office of Highway Operations removed a total of 16.23 tons of trash and 393 tires from July 2017 through June 2018. The Office of Highway Operations also conducts street sweeping and inlet cleaning.
- Frederick County Health Department Nuisance Waste Ordinance – **Ongoing**
  - According to the nuisance waste ordinance, Frederick County's Health Department enforces illegal dumping that is reported by OSER's IDDE program protocol. OSER tracked the removal of two illegal dumping complaints this reporting period as included in IDDE Report #5 and #14 (Section 5.3.4).

5.5 Property Management and Maintenance

There are eleven (11) Frederick County-owned and operated facilities that are currently covered by the 12-SW General Permit for Discharges from Stormwater Associated with Industrial Activities (Table 4). All eleven facilities currently have Stormwater Pollution Prevention Plans (SWPPPs) that are continuously updated by SWPPP team members through redline edits. The identified SWPPP team members also perform quarterly inspections, and visually monitor the outfalls associated with the BMPs on their property. Annual trainings occur in October and November. Spills are reported and documented internally and MDE is notified as required. Maryland Environmental Service has been contracted to assist, as necessary, with spill response and other 12-SW related tasks.

Table 4 - Notice of Intents (NOIs) with Permit Coverage through December 31, 2018

Facility Name	Permit Number	NOI Submitted	SWPPP Developed	SWPPP Complete	SWPPP Inspections Complete
Jefferson Copperfield Wastewater Treatment Plant	12SW2283	Yes	Yes	Yes	Yes
Ballenger McKinney Wastewater Treatment Plant	12SW1878	Yes	Yes	Yes	Yes
Reich's Ford Landfill	12SW2366	Yes	Yes	Yes	Yes
331 Montevue Lane (Frederick) Highway Operations Yard	12SW1890	Yes	Yes	Yes	Yes
Thurmont Highway Operations Yard	12SW1892	Yes	Yes	Yes	Yes
Johnsville Highway Operations Yard	12SW1891	Yes	Yes	Yes	Yes
Myersville Highway Operations Yard	12SW2285	Yes	Yes	Yes	Yes
Jefferson Highway Operations Yard	12SW2291	Yes	Yes	Yes	Yes

Facility Name	Permit Number	NOI Submitted	SWPPP Developed	SWPPP Complete	SWPPP Inspections Complete
Urbana Highway Operations Yard	12SW1893	Yes	Yes	Yes	Yes
Law Enforcement Center	12SW1942	Yes	Yes	Yes	Yes
Transit	12SW1888	Yes	Yes	Yes	Yes

This Annual Report contains the training information from FY18, as well as annual and quarterly inspections, annual training sign-ins, spill response forms, and other relevant data (Appendix I).

Data in relation to industrial facilities managed for stormwater can be found in the MunicipalFacilities feature class in the MDE_NPDES_MS4 geodatabase.

5.5.1 Road Maintenance Activities

During FY18, Frederick County continued to implement recommendations from its 2002 Assessment of Road Maintenance Activities (Versar, 2002). The objective of this study was to assess the effects of road maintenance activities on stormwater runoff and resulting impacts on surface water quality. The assessment evaluated current practices, analyzed alternative practices, and presented a plan to incorporate alternative practices into the County's road maintenance programs. Members of the County's Office of Highway Operations provided data and information on current practices and plans of the Department. Activities included in the evaluation were chemical usage in snow and ice removal, herbicide spraying for vegetation control, street sweeping, litter control, road surface maintenance, and maintenance of unpaved surfaces. The assessment report was submitted to MDE on June 11, 2002 and was found to meet NPDES permit requirements for developing a plan to reduce pollutants associated with road maintenance activities.

The County continues to move ahead with several of the recommendations developed in the June 2002 evaluation report. The activities that the County Office of Highway Operations undertook during the reporting timeframe of 7/1/17 through 6/30/18 to reduce runoff pollution were:

1. Street Sweeping: Street sweeping was conducted July 2017 through June of 2018. A total of 285.66 miles of road were swept totaling 79.32 tons of debris removed from roads in Frederick County during FY18. All curbed roads are swept at least once a year with some roads up to four times a year. All sweeping is conducted using a vacuum-assisted truck. Frederick County prioritizes closed-section main roads to be swept first followed by roads in developments. Once all sections are swept, the sweeping starts over with closed section main roads, etc. Complaints also drive prioritizations. In addition to complaint-driven sweeping, Highway Operations proactively sweeps bridge decks and other areas after deicing activities. When the Office of Highway Operations receives a complaint, the complaint is logged into a work order system and assigned to a foreman, and work is performed. Citizens either directly input complaints into the system through a link on the County's Highway Operations Department website; or, the Office of Highway Operations secretary receives calls and enters information into the work order request system. Street sweeping data is recorded by the districts. Lane Miles, Cubic Yards, Landfill Fee, and Landfill Weight by watershed are captured in reports from Highway Operations. Specific weight

information by watershed is available from October 2015-present while quarterly weight totals can be derived since January of 2015. For more information, a written SOP is in Appendix J.

2. Deicing: Caliber M1000, which is a 30% Magnesium Chloride solution with an agricultural by-product, is used in 48 of the County's trucks when the temperature is ≤ 25 ºF. The trucks are equipped with tanks that range from 90-120 gallons that apply the solution onto the salt mixture as it is spread onto the road. Overall, the County has 51 full-sized, ten-ton dump trucks and 14 smaller, one-ton dump trucks for deicing. The Caliber M1000 makes the salt mix more effective and reduces corrosion. The County does not use M1000 for de-icing at temperatures above 25 ºF. The M1000 is also sprayed onto the salt to pre-treat the roads, if the timing and conditions warrant.

   According to product literature for Caliber M1000 (http://www.innovativecompany.com/products/winter__/liquid-enhanced-liquid/caliber-m1000):

   "As a pre-wetting agent for salt and sand, Caliber M1000 reduces bounce and scatter, increases the speed at which the salt begins working, increases the melting capacity of the salt, and permits the use of salt at lower temperatures. Additionally, Caliber M1000 also reduces corrosion, inhibits crystal formation and product fallout at lower temperatures, and improves roadway traction when compared to other liquid products."

   Additional information on Caliber M1000 is also available at: http://www.innovativecompany.com/userfiles/file/sell_sheets/Caliber_M1000_Brochure.pdf.

   The use of deicers in FY18, by MDE watershed, is presented in Table 5 for Highway Operations. A total of 18,934 gallons of liquid deicer (Caliber M1000), 20,730 American standard tons of road salt (consisting of over 98.5% sodium chloride by weight), 170 tons of salt for brine treatment, and 551 American standard tons of anti-skid were used within the watersheds. Prior to 2009, Highway Operations used cinders instead of anti-skid. The switch to anti-skid was the result of the suspension of distribution of bottom ash for winter road treatment in order to conform to the Maryland Coal Combustion Byproducts (CCB) regulations. These regulations prohibit placement of CCBs in areas other than approved disposal facilities. As a result, Highway Operations began using an anti-skid material purchased from local quarries. It is a small, uniform size stone that contains very little dust/fine material. Thus far, the material has been working well. Starting in December 2008, one of the objectives of Highway Operations was to use more liquid deicer in an attempt to use less salt. They are also pre-treating the roads, whenever appropriate, to apply material under the snow/ sleet / ice layer so that frozen precipitation cannot bond to the road, which should result in a significant reduction in materials used. In addition, Highway Operations developed and implemented a Salt Management Plan to provide a framework to deliver safe, efficient roadway systems during winter storm events in a cost effective and environmentally sensitive manner.

   In its review of the 2016 Annual Report, MDE, “requests that the County provide an assessment of how de-icing procedures are reducing the application of salt during winter weather.” Frederick County responded in 2016 to a similar request and had examined whether the use of deicer (Caliber M1000) reduced the amount of road salt used during snow events. There did not seem to be a clear pattern in the use of these two techniques over time, in relation to the total amount of snowfall recorded in the County for the year. Additionally, Caliber was quite expensive. The

County will continue to evaluate effectiveness of deicing materials and look at additional variables such as: temperature, number of snowfall events, pretreatment events, and length of time the snow lays on the ground. The County found that pretreatment with the brine allowed the county to use significantly less granular salt. The County invested significantly in this equipment after the end of FY17 and continues to implement brine technology during storm events.

3. Inlet Cleaning: All Highway Operations foremen began reporting inlet-cleaning statistics in 2004. A total of 452 inlets were cleaned in Fiscal Year 2018, of which 89 inlets were vactored. Inlet-cleaning statistics are reported in the quarterly reports under Drainage. Prioritization of inlet/pipes cleaned by the County are complaint-driven, using the same mechanism to report issues as street sweeping noted above. For more information, a written SOP is provided in Appendix K. In addition to inlet cleaning, storm ceptor cleanings are performed on a regular basis. Approximately 1/3 are cleaned each year by contractors for the County.

4. Data Collection: Reports were collected quarterly from district foremen and submitted to the department head. At the end of 2009, data collection improvements were made to better track application of snow removal materials as discussed above under "Deicing".

5. Reducing the Use of Pesticides, Herbicides, Fertilizers and Other Pollutants: The 2002 road maintenance assessment report presented data on two herbicides, Razor and Pendulum, which were used by the County's Office of Highway Operations in 2001. Pendulum, with 37.4% pendamethalin as the active ingredient, was noted to be an environmentally-unfriendly chemical with potential impacts to aquatic life. The report recommended that the County review its use and consider alternative treatments. As reported in the 2003 Pesticide/ Herbicide report (Versar, 2003) and subsequent NPDES Annual Reports (see Section 5.5.2), the use of Pendulum has been discontinued. In 2015, Ranger Pro (a generic version of Roundup), DMA 4 IVM, and CWC-90 (a non-ionic surfactant) were used for weed control by the Office of Highway Operations. In FY18, the Office of Highway Operations sprayed 10,125 gallons (diluted quantity, Ranger Pro) of herbicide along approximately 93 miles of road guardrails in the County.

Evaluation: The County's Office of Highways and Transportation continues to implement the recommendations of the Road Maintenance Report and to experiment with new technology to reduce its activities' impacts on water quality.

Data in relation to chemical application from Highway Operations can be found in the ChemicalApplication table in the MDE_NPDES_MS4 geodatabase.

Table 5 - Office of Highway Operations Use of Deicers by Watershed FY18

Watershed	Gallons of Brine	Tons of Salt for Brine	Gallons of Liquid Caliber (M1000)	Tons of Road Salt	Tons of Anti-skid
Catoctin Creek	23,500	25	3,246	3,927	357
Double Pipe Creek	5,500	6	778	930	0
Lower Monocacy	69,918	75	6,145	8,442	53
Potomac	23,350	25	1,135	743	0
Upper Monocacy	35,020	38	7,630	6,685	142
Countywide (No recorded location)	1,200	1	0	3.75	0
Total	**158,488**	**170**	**18,934**	**20,730**	**551**

5.5.2 Herbicides, Pesticides, Fertilizers

Because of concern for environmental health, MDE, through the requirements of NPDES MS4 Permits, requires local jurisdictions to evaluate their current uses of pesticides, herbicides, and fertilizers and to seek opportunities to reduce use of these materials. To address this requirement, during 2002-2003, Frederick County sponsored a study to characterize uses of pesticides, herbicides, and fertilizers by County agencies and to identify potential reduction strategies - *Recommendations for Alternatives to Pesticide/Herbicide/Fertilizer Use for Frederick County, December 17, 2003* (Versar, 2003).

Frederick County initiated this study in fall 2002 by surveying County divisions about pesticide, herbicide, and fertilizer use at all County-owned facilities and by all Frederick County Government agencies or departments. At the time, four County units were found to apply herbicides, pesticides, and/or fertilizers: (1) the Maryland Department of Agriculture's (MDA) Vector Control Program, which works in conjunction with the Frederick County Mosquito Control Program, (2) the Division of Parks and Recreation, (3) Frederick County's Office of Highway Operations, and (4) the Frederick County Weed Control Program.

Study results indicated that pesticide/herbicide/fertilizer use by Frederick County did not require any drastic reduction in application practices because County agencies had, in general, already minimized use of these chemicals, or were already using more environmentally acceptable substitutes. In most cases, the overall recommendation was to continue current chemical control practices, while considering possible biological and mechanical controls that could be used in place of, or in combination with, current practices.

A number of practices are already employed by County personnel to control the application of chemicals and, where possible, to use minimal amounts. Frederick County departments apply pesticides on an "as needed" basis. Any pesticide usage is documented in Appendix L. Fertilizer is applied one to three times per year at specific locations. Most of the departments surveyed indicated specifically that application rates were based on label instructions, and were made at the lowest rate required for effectiveness.

Herbicide Use

Frederick County Weed Control Program, Frederick County's Division of Parks and Recreation, and Frederick County's Office of Highway Operations continue to monitor weather conditions around the time of application; applications are not performed if heavy rain is expected within 2 hours of application. The Weed Control Program continues to verify that application personnel are registered with the Maryland Department of Agriculture (MDA) Pesticide Regulation Section and are either licensed applicators or work directly under the supervision of one.

As noted in the Road Maintenance Activities section (Section 5.5.1), Frederick County Highway Operations has discontinued the use of the herbicide Pendulum, which is toxic to aquatic life, and has replaced its use of Razor with more environmentally-friendly herbicides, which included Ranger Pro (a generic version of Roundup), DMA 4 IVM, and CWC-90 (a non-ionic surfactant) in 2015.

Location of Herbicide, Pesticide, and Fertilizer Application

In regards to Frederick County Weed Control herbicide application, location information is provided in individual spraying reports, and summaries are provided in Appendix L. Frederick County Weed Control sprayed 1,250 gallons of diluted Round-Up Pro, 2,500 gallons of diluted Transline, 919 gallons of diluted Milestone, 100 gallons of Avatar, and 930 gallons of Crossbow. The totals of these activities are reflected in the MDE geodatabase table ChemicalApplication. In the case of Highway Operations' guardrail

herbicide application, the County tracks application by highway district. GIS analysis was used to estimate gallons by watershed within each district. The map in Figure 7 shows the boundaries of highway districts and watersheds within the County. Table 6 is the result of a GIS analysis estimating the number of gallons applied per watershed based on County right-of-way (ROW) within each highway district and watershed.

Figure 7 - Highway DistrictROW in Relation to Watershed Boundaries

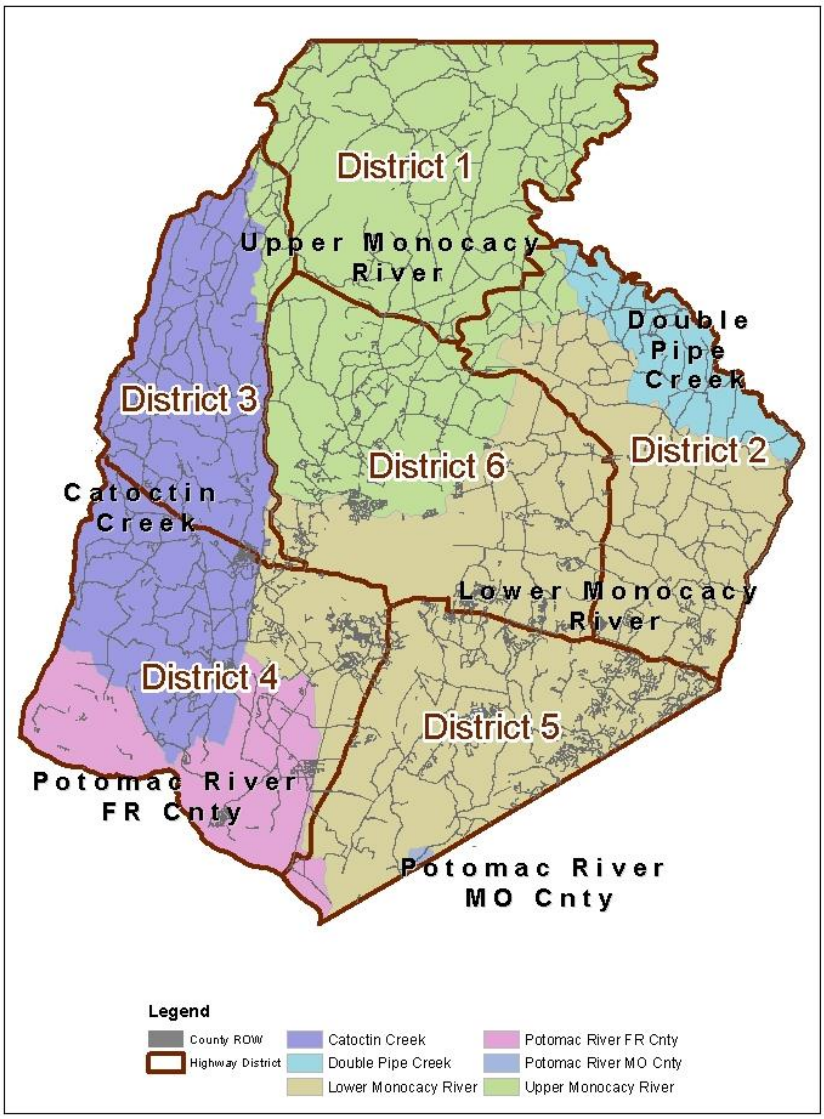


Table 6 - Highway Operations Estimated Ranger Pro Application Within Each Watershed FY18

Watershed	Estimated Gallons per Watershed
Catoctin Creek	749
Double Pipe Creek	719
Lower Monocacy River	5,754
Potomac River FR Cnty	163
Potomac River MO Cnty	26
Upper Monocacy River	2,714
Total	**10,125**

Currently, Herbicide, fertilizer, and pesticide data collected by Parks and Recreation is unable to be reported with locations. The County will work to improve data collection amongst various departments to improve reporting of herbicide, pesticide, and fertilizer applications.

All Herbicide, pesticide, and fertilizer use by County Department from 7/1/17 through 6/30/18, is presented in Appendix L, and data in relation to chemical application, along with historical application, can be found in the ChemicalApplication table in the MDE_NPDES_MS4 geodatabase.

5.6 Public Outreach and Education Program

In FY18, OSER staff continued to make impacts through the County's public outreach and education program. Frederick County addressed permit-suggested outreach topics and met its own goals and objectives from *The Strategic Plan to Improve Water Quality through Public Outreach in Frederick County, Maryland*, published in November 2003. Outreach activities are used to educate citizens, to direct the course of watershed plans, and to identify landowners for potential restoration activities. OSER enhanced its outreach materials as well as its efforts to provide its citizens with needed educational touchpoints.

In addition to the permit requirements for outreach, other key County initiatives are also mentioned below that can be seen in the following sections, and in the summary of public outreach and education activities in Table 7:

- Outreach related to the Monocacy & Catoctin Watershed Alliance (MCWA) and Green Leader Brigade;
- Outreach related to the Green Homes Challenge (GHC);
- Outreach related to Residential Septic Pump-outs;
- Outreach related to Pet Waste;
- Outreach related to Stormwater Management;
- Outreach related to Watershed Assessments and;
- Other County Outreach Initiatives.

Table 7 - Summary of Public Outreach and Education Activities FY18

Type	Date(s)	Description
Increasing Water Conservation		
Monocacy and Catoctin Watershed Alliance Web Page	Ongoing	The Monocacy and Catoctin Watershed Alliance webpage (http://watershed-alliance.frederickcountymd.gov) links to the County webpage and features information for citizens on stormwater outreach topics.
Rain Barrel Promotion	Ongoing	The Scott Key Center, a division of the Frederick County Health Department, offered water-saving Rainwater Collection Systems. Developmentally disabled clients at the Scott Key Center convert recycled olive barrels into rain barrels and make them available for purchase to Frederick County residents. Rain Barrels are available for some county residents through the grant- funded Expanded Neighborhood Green Program.

Type	Date(s)	Description
Commercial Property Assessed Clean Energy (C-PACE) Loan program	Ongoing	The Frederick County Council passed bill number 16-17 on November 15, 2016 to enable Frederick County to create a PACE program. The bill lists "Water conservation devices not required by law" as an eligible practice. The PACE Program kicked off on October 16, 2017. https://www.fredericknewspost.com/news/economy_and_business/personal_finance/county-launches-program-to-help-businesses-invest-in-renewable-energy/article_62f7f042-4850-5719-a533-43a6a51506c0.html
Residential and Community Stormwater Management Facility Implementation and Maintenance		
Point of Rocks Neighborhood Stream Restoration and Pond Retrofit	Ongoing	A stream restoration and pond retrofit was initiated as a result of the Point of Rocks Comprehensive Stormwater Master Plan. As of June 2018, 90% design is completed.
Green Leader Tip Sheets	Ongoing	OSER publishes tip sheets on stormwater and clean water –related topics that include "Composting-Do the Rot Thing", "Gardening with Native Plants", "Natural Household Cleaners", "Maintaining your Lawn While Protecting Water Quality", "Harvesting Rainwater Using Rain Barrels", "Design and Construction of a Rain Garden", available https://www.frederickcountymd.gov/7595/Publications-and-Resources
Stormwater Maintenance Fact Sheets	Ongoing	With design templates from Charles County, OSER published fact sheets on property maintenance of stormwater best management practices, to include: "Guidance for Maintaining Dry Wells", "Guidance for Maintaining Rain Garden, Bioswale, and Micro-Bioretention Facilities", "Guidance for Maintaining Porous Pavement", and "Guidance for Maintaining Stormwater Management Ponds", available at https://www.frederickcountymd.gov/7595/Publications-and-Resources
Watershed Study Public Comment Period for various Watershed Restoration Assessments	10/7/17 thru 11/27/17	OSER provided 30 day public comment period for the following assessments: Upper Monocacy Watershed Assessment, Lower Monocacy Watershed Assessment, Ballenger Creek Stormwater Master Plan, Little Hunting Creek Watershed Assessment and Restoration Concept Report, County-owned Stormwater Management Best Practices Retrofit Assessment, and Point of Rocks Storm Drain Analysis.
Frederick County Master Gardeners Presentation	4/21/18	Staff presented an educational stormwater management workshop on introduction to stormwater management and how the Master Gardeners could assist. Staff also provided a snapshot of stormwater management practices that are ongoing throughout the County.
Residential Car Care and Washing		
Car Free Day	9/22/17	County TransIT Services Division promoted Car Free day and outreach about alternative transportation. See https://www.fredericknewspost.com/news/economy_and_business/county-city-to-participate-in-car-free-day/article_332e55cd-6a76-5e3f-b378-838c2a69f727.html
Proper Erosion and Sediment Control Practices		

Type	Date(s)	Description
Backyard Buffers Program	March-April 2018	Maryland Forest Service, an Alliance partner, worked with the County to conduct outreach that provides free trees to homeowners with frontage on unbuffered streams. The program distributed 89 tree bundles (containing 25 seedlings each) to Frederick County households.
Creek ReLeaf Program	2/8/18 thru 7/27/18	Staff worked with the Frederick News-Post on articles about the County Creek ReLeaf Program: https://www.fredericknewspost.com/news/environment/open_space/a-tree-grows-in-frederick-county/article_96d1b54f-d5d9-5b0e-9168-7a35390a6617.html https://www.fredericknewspost.com/news/environment/open_space/fighting-floods-with-trees-frederick-county-opens-year-two-of/article_a7074c0d-aad7-5288-8217-8d85fc450e65.html
Woody Vegetation Control Methods Handout	Ongoing	County SWM inspection staff routinely hand out a one-page fact sheet, "Woody Vegetation Control Methods: Guidelines for Stormwater Facilities", to homeowner associations, property management groups, developers, and others responsible for maintaining stormwater management facilities.
Inspection Program	Ongoing	Stormwater Management Facility inspections are conducted triennially with explicit direction for maintenance/correction when problems are discovered.
Improving Lawn Care and Landscape Management		
Green Leader Brigade Tree Diversity Workshop	10/7/17	OSER staff and the Green Leader Brigade partnered with the City of Frederick, on a very informative walk through Waterford Park in Frederick. Participants learned about tree canopy, diversity, and choosing the right tree for the right place.
Middletown Elementary Brownie Troop Presentation	4/8/18	OSER staff gave a presentation to Brownie Troop members about the Green Homes Challenge and Neighborhood Green.
FCG Lunch and Learn Series	4/16/18 thru 5/14/18	OSER staff presented presentations to Frederick County employees and residents on ways to go green and how to engage in environmental stewardship.
Project Clean Stream	4/14/18	The OSER Green Leader Brigade participated in the Alliance for the Chesapeake Bay's annual Project Clean Stream at the Catoctin Nature Center.
Canal Run Tree Planting	5/5/18	OSER organized and coordinated a tree planting project with partnerships through Stream-Link Education and the Canal Run homeowners association. Efforts included planting approximately 1 acre of trees using grant funds from the Chesapeake Bay Trust.
Pet Waste		
Program Planning and Research	June-July 2017	OSER staff began the planning stages to incorporate a pet waste program around the County. The first steps involved developing a pet waste survey to research current pet waste management habits among County citizens. OSER hopes to report the results of the survey and the pilot program in the FY18 Annual Report.
Pet Waste Survey	Ongoing	OSER staff developed a pet waste survey to learn about pet waste behavior by citizens. https://www.surveymonkey.com/r/6QJB3DF

Type	Date(s)	Description
Pet Waste Outreach	10/1/2017 thru 12/30/17	OSER staff worked with 8 veterinarian offices, 2 pet stores, 2 pet daycares and two local Fall events within Frederick County to promote better pet waste management behaviors by completing pet waste management surveys and handing out Pet waste tip sheets and pet waste bag dispensers.
Frederick County Permits Office	Ongoing	OSER staff has pet waste management tip sheets information within the permits office lobby area.
Ballenger Creek Club HOA Presentation	2/8/18	OSER staff spoke to the Ballenger Creek HOA members regarding pet waste issues in the neighborhood and the County's pet waste program with information discussion, handing out pet waste tip sheets and pet waste bag dispensers.
Monocacy Village Park – Fast & the Furriest 5k	4/2/18	This was the first very exciting all dog event OSER staff tabled to promote better pet waste management behaviors by completing pet waste management surveys and handing out pet waste tip sheets and pet waste bag dispensers.
Septic System Outreach		
Septic System Pump-Out Rebate Program	Ongoing	Frederick County Government announced the Septic System Pump-Out Rebate Program on April 5, 2018. https://www.frederickcountymd.gov/DocumentCenter/View/307860/PROMOSepticSystemFINALFY19
Septic Survey	4/5/17 thru 6/30/18	OSER staff developed a septic survey to learn about septic pump-out behavior by citizens.
Homeowner's Guide to Septic Systems	Ongoing	OSER staff published Environmental Protection Agency (EPA's) Homeowner's Guide to Septic Systems along with a Septic System checklist at https://www.frederickcountymd.gov/DocumentCenter/View/300313
Frederick County Permits Office	Ongoing	OSER staff has septic rebate applications within the permits office lobby area.
Frederick County Health Department	Ongoing	OSER staff worked with Frederick County Health department in providing septic rebate packets for their office, and to pass out at their events.
Farm Bureau	June 2017	OSER staff received support for the program from the Farm Bureau by sending an email to their contacts about the program
Septic System Pump-Out Rebate Program	Ongoing	Frederick County Government announced the Septic System Pump-Out Rebate Program https://www.frederickcountymd.gov/DocumentCenter/View/307860/PROMOSepticSystemFINALFY19 Septic Rebate program approved and open to the public on April 5, 2018 and has proven to be very successful with approximately 130 approved applicants received and approved from April 5 thru June 30, 2018. The program's early success would not have been possible without County outreach efforts along with the support of the permitted septic haulers and the farm bureau, all working together to promote the program.
Increasing Proper Disposal of Household Hazardous Waste		
Household Hazardous Waste Day	Bi-annually	The County sponsors two household hazardous waste (HHW) days each year and promotes them widely in the media. Pharmaceuticals (in their original containers) are now acceptable items for drop-off at HHW events.

Type	Date(s)	Description
Household Hazardous Waste Website	Ongoing	A website directs citizens to solutions for household hazardous waste at https://www.frederickcountymd.gov/3958/Household-Hazardous-Wastes
Prescription Drug Disposal	Ongoing	There are six sites throughout the county where citizens can safely dispose of their expired and/or unwanted household medicines and prescription drugs. This is a collaborative effort between the community and the Frederick County Health Department and local law enforcement agencies. The locations are: ◦Brunswick Police Department- 20 E. A St., Brunswick, MD 21716 ◦Emmitsburg Community Center- 2nd Floor, 300 South Seton Avenue, Emmitsburg, MD 21727. ◦Frederick Police Department- 100 West Patrick Street, Frederick, MD 21701 ◦Maryland State Police Barracks- 110 Airport Drive E., Frederick, MD 21701 ◦Middletown Municipal Center - 31 W. Main St., Middletown, MD 21769 ◦Thurmont Police Department- 800 Main St., Thurmont, MD 21788
Department of Utilities & Solid Waste Management (DUSWM) Web Page	Ongoing	The Department of Utilities & Solid Waste Management has information available on its website (https://frederickcountymd.gov/529/Landfill-Information) for County residents on various landfill programs, such as disposal of household hazardous wastes, recycling, source reduction, and backyard composting.
Used Motor Oil and Antifreeze Drop-off Sites	Ongoing	The county maintains a list of used motor oil recycling drop-off locations on its website (http://www.frederickcountymd.gov/index.aspx?nid=1753).
Green Leader Challenge interactive web page	Ongoing	The Green Leader Challenge, one of 3 sub-challenges that make up the overall Green Homes Challenge, helps County residents adopt environmentally friendly practices. In the Green Leader Challenge, there are 5 actions that educate and motivate Challenge participants to adopt practices that minimize or eliminate household hazardous waste. To date, more than 2,094 individuals have registered with the overall Green Homes Challenge and 280 are self-certified as Green Leaders.
Provide Information to the Regulated Community		
Stormwater Improvement Plans and As-Builts Digital submission, Pilot program start	7/5/17	Division of Planning Development Review, OSER and IIT pilot group started submissions of CADD layer standards for digital submissions of approved improvement plans and as-builts.
Spring 2018 Western Maryland WIP Workshop	6/19/2018	Staff attended the WIP Workshop to discuss a variety of topics related to the Phase III WIP. Discussions arose with collaborating and coordination between the Agricultural and Urban sectors.
Stormwater Improvement Plans and As-Builts Digital submission coordination	8/24/17-1/1/18	Division of Planning Development Review, OSER, IIT, and engineering community coordination to improve as-built and digital submission process. https://frederickcountymd.gov/3199/Applications-Checklists
MS4-MDE Local TMDL meeting	11/3/18	Discussions with all Phase I permitees and MDE to discuss PCBs, as-built issue, introduction of MDE's WIP coordinator for MS4s
MDE Workshop with Municipalities	8/10/17	OSER and MDE met with six municipalities covered under the Phase II MS4 permit to discuss various programmatic and permit requirements.

Type	Date(s)	Description
Assistance to Municipalities on MS4 compliance	Ongoing	Staff routinely works with municipalities to help with elements of MS4 permit compliance including public outreach, illicit detection and elimination, source identification, and other topics. Some topics such as erosion and sediment control, plan review, and triennial inspections are covered by agreement with municipalities.
Maryland Municipal Stormwater Association	Ongoing	OSER staff served on the Executive Board of the Maryland Municipal Stormwater Association and worked to inform member jurisdictions on policy issues related to stormwater compliance.
Metropolitan Washington Council of Governments	Ongoing	OSER staff served on the Chesapeake Bay Policy Committee at MWCOG and shared information with member jurisdictions on stormwater and Chesapeake Bay policy issues.
Water Quality Technical Advisory Committee	Ongoing	OSER Staff served on the WQTAC, researched water quality trading program best practices, and developed policy positions on behalf of MACo.
Outreach Events for All County Initiatives		
In the Street	9/9/17	OSER staff attended this annual outreach event promoting the Green Homes Challenge, Neighborhood Green, and best management practices for residential storm water, lawn care, pet waste management, and septic Pump-out information. Surveys conducted on pet waste management and Tip Sheets for all environmental areas were made available to 95 booth attendees.
Frederick County Home Show	3/17/18 thru 3/18/18	OSER hosted a booth at this 2-day event with the objective of informing County residents about the Neighborhood Green and Green Homes Challenge programs. Table hosts informed 166 visitors about these programs and provided lawn care and landscape best management practices information through our Green Leader Tip Sheets.
7th Annual Green Homes Challenge Recognition Event	3/29/18	Green Homes Challenge Certified Households were recognized at an annual celebration. https://frederickcountymd.gov/7600/7th-Annual-Green-Homes-Challenge-Recogni
MOM'S Organic Market Tabling	4/4/18	OSER staff hosted a table at Mom's Organic Market to promote green programs to customers.
Catoctin Nature Fest	4/21/18	OSER staff hosted a booth and informed 50 booth visitors about the Green Homes Challenge, Neighborhood Green, and best management practices for residential storm water, lawn care, Pet waste management and Septic Pump-out information. Surveys conducted on pet owner waste management and Tip Sheets for all environmental areas were made available to booth attendees.
Thurmont Green Fest	4/21/18	OSER staff and volunteers hosted a booth and informed 40 booth visitors about the Green Homes Challenge, Neighborhood Green, and best management practices for residential storm water, lawn care, Pet waste management and Septic Pump-out information. Surveys conducted on pet owner waste management and Tip Sheets for all environmental areas were made available to booth attendees.

Type	Date(s)	Description
Annual Native Plant Sale	4/28/18	The Annual Native Plant Sale was held at the Audrey Carroll Audubon Sanctuary with a large selection of native woody and herbaceous plants as well as information on how to plant and care for them and the benefits of using native plants. The Audubon Society of Central Maryland, an Alliance partner, sponsors the native plant sale.
Green Leader Brigade Tree Planting Event	5/5/18	OSER staff and the Green Leader Brigade partnered with Stream-Link Education to plant one acre of trees in the Canal Run neighborhood of Point of Rocks. The project was funded by a grant through the Chesapeake Bay Trust.
Green Neighbor Festival	5/12/18	This exciting event was held around Culler Lake in Frederick's Baker Park and introduced homeowners and business owners to practical steps they can take now to improve their local environment, reduce storm water run-off, make their backyards more hospitable to local fauna, improve pet waste management, maintain their septic system, and more. OSER sponsored a family-friendly environmental activity booth at this event.
Mother Earth News Fair	6/2/18 thru 6/3/18	OSER staff participated in this two-day event to promote the Green Homes Challenge, the Green Leader Brigade, Pet Waste Management, and Septic Pump-Out, and more. Tip Sheets were made available to booth attendees.
Frederick County Housing Fair	6/16/18	OSER staff gave a presentation on "Tools, Incentives and Programs to Go Green".
Green Leader Challenge interactive web page	Ongoing	The Green Leader Challenge, one of 3 sub-challenges that make up the overall Green Homes Challenge, helps County residents adopt environmentally friendly practices. In the Green Leader Challenge, there are 11 outdoor water conservation actions and 17 other outdoors and yard actions that educate and motivate Challenge participants to adopt lawn care and landscape management best practices. To date, more than 2,230 individuals have registered with the overall Green Homes Challenge and 295 are self-certified as Green Leaders.
Catoctin Creek Watershed Assessment Mailing	April 2018	102 properties within the Catoctin Creek Watershed received a letter detailing the County's efforts to identify opportunities to improve water quality as well as provide educational links where property owners could learn more in regards to streams and watersheds, and other restoration activities the County is performing.
Potomac Direct Watershed Assessment Mailing	May 2018	85 properties within the Catoctin Creek Watershed received a letter detailing the County's efforts to identify opportunities to improve water quality as well as provide educational links where property owners could learn more in regards to streams and watersheds, and other restoration activities the County is performing.
Double Pipe Creek Watershed Assessment Mailing	April 2018	109 properties within the Catoctin Creek Watershed received a letter detailing the County's efforts to identify opportunities to improve water quality as well as provide educational links where property owners could learn more in regards to streams and watersheds, and other restoration activities the County is performing.

Type	Date(s)	Description
Raindrop Rodeo: Reducing Stormwater Runoff	April, 21, 2018	OSER staff presented a unique presentation and demonstration seminar on various ways residents, businesses, and the County can reduce stormwater impacts. Participants were amazed during the demonstrations to see what types of practices could assist in capturing stormwater. This seminar was well received and was a pre-curser to the stormwater restoration activities proposed at the Extension Services Building. https://www.eventbrite.com/e/frederick-county-master-gardener-seminar-saturday-april-21st-tickets-41826717839#
Chesapeake Conservation Corps	Ongoing	Frederick County Government hosts Chesapeake Conservation Corps members and works with these recent graduates to learn about stormwater programs. The Corps members help with outreach efforts throughout the year. http://www.fredericknewspost.com/news/environment/volunteers-help-county-office-sort-out-stormwater-issues/article_160db9ca-3f72-5703-b579-f27ca1e9c746.html
Outreach Events for All County Initiatives		
In the Street	9/9/17	OSER staff attended this annual outreach event promoting the Green Homes Challenge, Neighborhood Green, and best management practices for residential storm water, lawn care, pet waste management, and septic Pump-out information. Surveys conducted on pet waste management and Tip Sheets for all environmental areas were made available to 95 booth attendees.
Frederick County Home Show	3/17/18 thru 3/18/18	OSER hosted a booth at this 2-day event with the objective of informing County residents about the Neighborhood Green and Green Homes Challenge programs. Table hosts informed 166 visitors about these programs and provided lawn care and landscape best management practices information through our Green Leader Tip Sheets.
7th Annual Green Homes Challenge Recognition Event	3/29/18	Green Homes Challenge Certified Households were recognized at an annual celebration. https://frederickcountymd.gov/7600/7th-Annual-Green-Homes-Challenge-Recogni
MOM'S Organic Market Tabling	4/4/18	OSER staff hosted a table at Mom's Organic Market to promote green programs to customers.
Catoctin Nature Fest	4/21/18	OSER staff hosted a booth and informed 50 booth visitors about the Green Homes Challenge, Neighborhood Green, and best management practices for residential storm water, lawn care, Pet waste management and Septic Pump-out information. Surveys conducted on pet owner waste management and Tip Sheets for all environmental areas were made available to booth attendees.
Thurmont Green Fest	4/21/18	OSER staff and volunteers hosted a booth and informed 40 booth visitors about the Green Homes Challenge, Neighborhood Green, and best management practices for residential storm water, lawn care, Pet waste management and Septic Pump-out information. Surveys conducted on pet owner waste management and Tip Sheets for all environmental areas were made available to booth attendees.

Type	Date(s)	Description
Annual Native Plant Sale	4/28/18	The Annual Native Plant Sale was held at the Audrey Carroll Audubon Sanctuary with a large selection of native woody and herbaceous plants as well as information on how to plant and care for them and the benefits of using native plants. The Audubon Society of Central Maryland, an Alliance partner, sponsors the native plant sale.
Green Leader Brigade Tree Planting Event	5/5/18	OSER staff and the Green Leader Brigade partnered with Stream-Link Education to plant one acre of trees in the Canal Run neighborhood of Point of Rocks. The project was funded by a grant through the Chesapeake Bay Trust.
Green Neighbor Festival	5/12/18	This exciting event was held around Culler Lake in Frederick's Baker Park and introduced homeowners and business owners to practical steps they can take now to improve their local environment, reduce storm water run-off, make their backyards more hospitable to local fauna, improve pet waste management, maintain their septic system, and more. OSER sponsored a family-friendly environmental activity booth at this event.
Mother Earth News Fair	6/2/18 thru 6/3/18	OSER staff participated in this two-day event to promote the Green Homes Challenge, the Green Leader Brigade, Pet Waste Management, and Septic Pump-Out, and more. Tip Sheets were made available to booth attendees.
Frederick County Housing Fair	6/16/18	OSER staff gave a presentation on "Tools, Incentives and Programs to Go Green".
Green Leader Challenge interactive web page	Ongoing	The Green Leader Challenge, one of 3 sub-challenges that make up the overall Green Homes Challenge, helps County residents adopt environmentally friendly practices. In the Green Leader Challenge, there are 11 outdoor water conservation actions and 17 other outdoors and yard actions that educate and motivate Challenge participants to adopt lawn care and landscape management best practices. To date, more than 2,230 individuals have registered with the overall Green Homes Challenge and 295 are self-certified as Green Leaders.
Catoctin Creek Watershed Assessment Mailing	April 2018	102 properties within the Catoctin Creek Watershed received a letter detailing the County's efforts to identify opportunities to improve water quality as well as provide educational links where property owners could learn more in regards to streams and watersheds, and other restoration activities the County is performing.
Potomac Direct Watershed Assessment Mailing	May 2018	85 properties within the Catoctin Creek Watershed received a letter detailing the County's efforts to identify opportunities to improve water quality as well as provide educational links where property owners could learn more in regards to streams and watersheds, and other restoration activities the County is performing.
Double Pipe Creek Watershed Assessment Mailing	April 2018	109 properties within the Catoctin Creek Watershed received a letter detailing the County's efforts to identify opportunities to improve water quality as well as provide educational links where property owners could learn more in regards to streams and watersheds, and other restoration activities the County is performing.

Type	Date(s)	Description
Raindrop Rodeo: Reducing Stormwater Runoff	April, 21, 2018	OSER staff presented a unique presentation and demonstration seminar on various ways residents, businesses, and the County can reduce stormwater impacts. Participants were amazed during the demonstrations to see what types of practices could assist in capturing stormwater. This seminar was well received and was a pre-curser to the stormwater restoration activities proposed at the Extension Services Building. https://www.eventbrite.com/e/frederick-county-master-gardener-seminar-saturday-april-21st-tickets-41826717839#
Chesapeake Conservation Corps	Ongoing	Frederick County Government hosts Chesapeake Conservation Corps members and works with these recent graduates to learn about stormwater programs. The Corps members help with outreach efforts throughout the year. http://www.fredericknewspost.com/news/environment/volunteers-help-county-office-sort-out-stormwater-issues/article_160db9ca-3f72-5703-b579-f27ca1e9c746.html

Appendix M consolidates Frederick County media files of public outreach activities.

5.6.1 Outreach Related to Monocacy & Catoctin Watershed Alliance (MCWA)

As described in previous Annual Reports, the Upper and Lower Monocacy Watershed Restoration Action Strategy (WRAS) Steering Committees developed the Monocacy & Catoctin Watershed Alliance (MCWA or the Alliance) in order to continue outreach begun during the Upper and Lower Monocacy WRAS efforts and to begin implementation of the Upper and Lower Monocacy WRAS plans.

County staff continued to coordinate with MCWA in FY18. Quarterly meetings enable attendees to discuss educational outreach opportunities as well as develop restoration and protection projects to support water quality and habitat initiatives. Partners involved in MCWA include but are not limited to:

- Local Organizations
  - Audubon Society of Central Maryland
  - Catoctin and Frederick Soil Conservation Districts
  - Catoctin Forest Alliance
  - Frederick County Forest Conservancy District Board
  - Catoctin Land Trust
  - Frederick County Conservation Club
  - Frederick County Master Gardeners
  - Local Citizens
  - Bar-T Mountainside Challenge & Retreat Center
- Regional Organizations
  - Potomac Conservancy
  - Potomac Watershed Partnership
  - Interstate Commission on the Potomac River Basin (ICPRB)
  - Center for Watershed Protection (CWP)
  - Potomac Valley Fly Fishers, Inc.
  - Chesapeake Conservation Corps
  - Trout Unlimited
- Funding Agencies

  - Chesapeake Bay Trust
  - Alice Ferguson Foundation
  - Maryland Dept. of the Environment/U.S. EPA Clean Water Act Section 319 (h) Program
  - Maryland Urban & Community Forestry Committee (MUCFC)
  - National Fish and Wildlife Foundation (NFWF)
  - Chesapeake & Atlantic Coastal Bays Trust Fund
- Educational Institutions
  - Hood College
  - Mount Saint Mary's University
  - University of Maryland Extension Office
  - Frederick County Public Schools (FCPS)
- Government Organizations
  - Frederick County Council
  - Frederick County Executive
  - Frederick County Division of Planning and Permitting
  - Office of Sustainability and Environmental Resources
  - Comprehensive Planning
  - Development Review
  - Permits and Inspections
  - Division of Public Works
  - Division of Utilities and Solid Waste Management
  - Health Department, Environmental Health Section
  - Division of Parks and Recreation
  - Sustainability Commission
  - Municipalities in Frederick County
  - Maryland Department of Natural Resources
    - Forest Service
    - Fisheries
    - Watersheds Program
    - Wildlife & Heritage Service
  - Maryland Department of the Environment
  - Cunningham Falls State Park
  - National Park Service
    - Catoctin Mountain Park
    - Monocacy National Battlefield Park
    - Rivers, Trails and Conservation Assistance
  - U.S. Environmental Protection Agency
    - Environmental Information and Analysis
  - U.S. Fish and Wildlife Service

Public outreach efforts implemented by the Alliance during FY18 included Alliance website updates, the quarterly E-newsletters, and the Green Leader Brigade program.

The Alliance website (watershed-alliance.frederickcountymd.gov) includes a list of upcoming of events, past articles, links to quarterly meeting presentations, resources and publications. Information on MCWA is also available in the OSER quarterly e-newsletter, expanding the Alliance's reach to more than 2,200 County households and/or Alliance partners.

The MCWA Watershed Steward Program was developed to recognize the efforts of community members to protect and restore the natural resources of the Monocacy & Catoctin watersheds in Frederick County by implementing conservation and best management practices on their property. Watershed Steward signs or certificates are available to community members who meet the criteria for one of eight different categories:

1) Improving Watershed Health Through Community Partnerships
2) Rain Garden
3) Forest Conservation Practice
4) Agricultural Conservation Practice
5) Forest Land Protection
6) Farm Land Protection
7) Tree Planting
8) Wildlife Habitat Improvement

Alliance members developed a set of criteria and a nomination form to be completed by the sponsor. The original printing of the signs was funded through a grant from the Chesapeake Bay Trust with a match provided by the Frederick County OSER. In past years, over 180 signs have been distributed and installed around the County.

5.6.2 Outreach Related to the Green Homes Challenge (GHC)

In addition to MCWA, OSER coordinates the Green Homes Challenge (GHC) program. The GHC combines proven outreach strategies and concrete actions in a unified, comprehensive approach that helps Frederick County residents adopt environmentally friendly practices, reduce energy use and utility bills, and use renewable energy.

The framework for the Challenge is a three-level Green Homes Challenge Certification Program; however, the educational, incentive, loan, and cooperative purchasing components are available to all whether or not residents choose to complete certification. The program incorporates incentives and behavior change strategies and is designed to meet the needs of people who like to do things themselves, prefer one-on-one mentoring, or are motivated by group participation.

The three Challenges and corresponding certification levels are:

1. Be a Power Saver -- Save Our Energy, Bank Your Money!

   Focuses on engaging and educating Frederick County households about the benefits of saving energy; emphasizes home energy audits, energy saving action plans, and retrofit projects.

2. Be a Green Leader -- Green Your Lifestyle, Protect Our Resources!

   Focuses on changes households can make related to their transportation, food choices, homes, yards, and offices that are environmentally friendly and reduce greenhouse gases. There are specific sections of this Challenge devoted to waste management, indoor and outdoor water conservation, and outdoor and yard maintenance practices to protect and improve water quality. This Challenge officially launched summer 2012.

3. Be a Renewable Star -- Renew Your Energy, Clear Our Air!
   Focuses on promoting renewable energy options through purchasing green power and renewable energy credits, and installing renewable energy systems with assistance from grants and cooperative purchasing (Launched 2013).

The outreach associated with the Green Leader Challenge focuses on improving water quality and addresses permit-suggested outreach topics. As of June 30, 2018, more than 2230 households had registered with the Green Homes Challenge and 295 households had completed Green Leader Certification. The Green Homes Challenge Recognition Event was held on March 29, 2018.

Evaluation: Frederick County continues to excel in public outreach. Not only has Frederick County addressed all of the suggested topics for outreach in the NPDES permit, it has also extended its public outreach strategy to meet restoration goals. Frederick County has greatly expanded its network through partnerships with local and regional organizations, particularly through the Monocacy & Catoctin Watershed Alliance. Agencies within Frederick County continue to educate the public about water quality through diverse programs.

6 Watershed Assessment and Restoration

6.1 Watershed Assessment

There are five 8-digit watersheds within Frederick County:

- Upper Monocacy River
- Lower Monocacy River
- Double Pipe Creek
- Catoctin Creek
- Potomac River – Frederick County

In the last Annual Report submittal, watershed assessments for Upper Monocacy River and Lower Monocacy River were completed in FY17 as well as a more focused assessment for Little Hunting Creek, located in the Upper Monocacy Watershed. Since January 2018, OSER initiated the final Watershed Studies for Double Pipe Creek, Catoctin Creek, and Potomac River – Frederick County. These watershed studies have assisted the County in identifying additional cost-effective projects to assist in improving water quality in Frederick County and beyond.

Assessments of the remaining watersheds (Double Pipe Creek, Catoctin Creek, and Potomac River) began with kick off meetings in January 2018 with the majority of the field work completed in Spring/Summer 2018. It is anticipated that the draft concepts and rankings will be completed in December 2018, and the draft watershed assessment reports will be posted to the County's website for the 30-day Public Comment period in February 2019. The remaining watershed assessments will be described in more detail in the next Annual Report Submission.

Frederick County created watershed restoration action strategies (WRAS) and watershed assessments for several watersheds:

- Upper Monocacy River WRAS, completed May 2005 (Frederick County, 2005)
- Lower Monocacy River WRAS, completed May 2004 (Frederick County, 2004)
- An Assessment of Stream Restoration and Stormwater Management Retrofit Opportunities in Lower Bush Creek Watershed, completed in August 2003 (Perot, Morris et al., 2003)
- An Assessment of Stormwater Management Retrofit and Stream Restoration Opportunities in Ballenger Creek Watershed, completed August 2005 (Perot, Morris et al., 2005)
- An Assessment of Stormwater Management Retrofit and Stream Restoration Opportunities in Linganore Creek Watershed, completed June 2006 (Perot, Morris et al., 2006)
- An Assessment of Stormwater Management Retrofit and Stream Restoration Opportunities in Bennett Creek Watershed, completed April 2009 (Stribling et al., 2009).
- Final Report Watershed Assessment of Ballenger Creek, completed January 2001 (Roth et al., 2001a)
- Watershed Assessment of Lower Bush Creek, completed March 2001 (Roth et al., 2001b)
- Watershed Assessment of Lower Linganore Creek, completed in June 2002 (Perot, Morris et al., 2002)
- Bennett Creek Watershed Assessment, completed March 2008 (Stribling et al., 2008)

6.1.1 Lower Monocacy River Water Assessment

The Lower Monocacy River watershed is 169,117 acres in size and is located within Frederick County, Carroll County, and Montgomery County. A watershed assessment was conducted to provide a roadmap for meeting NPDES Phase I and Chesapeake Bay TMDL requirements. The watershed assessment analyzed existing conditions, identified priority areas for restoration, prioritized restoration projects to address target pollutants, developed cost estimates for implementation, proposed a schedule for implementation, discussed education and outreach opportunities, and established a process for monitoring and measuring project success. There were four assessment components:

1. Evaluate Existing Stormwater Management Best Management Practices.
2. Re-evaluate proposed projects from previously completed watershed assessments
3. Conduct a visual survey of untreated impervious areas
4. Conduct spot stream assessments at a sampling of road crossings.

The assessment identified privately- and publicly-owned properties for retrofit options, then ranked them and proposed the top 45 sites for potential implementation by the County. The assessment was advertised in the Frederick News-Post and was available for a 30-day public comment period per permit requirements, which ended on November 26, 2017. No comments were received.

6.1.2 Upper Monocacy Watershed Assessment

The Upper Monocacy watershed covers approximately 204 square miles and has about 424 miles of streams. A watershed assessment was conducted to provide a roadmap for meeting NPDES Phase I and Chesapeake Bay TMDL requirements. The watershed assessment analyzed existing conditions, identified priority areas for restoration, prioritized restoration projects to address target pollutants, developed cost estimates for implementation, proposed a schedule for implementation, discussed education and outreach opportunities, and established a process for monitoring and measuring project success. The assessment identified privately- and publicly-owned properties for retrofit options, then ranked them and proposed the top 45 sites for potential implementation by the County. \

Assessments of effectively treated Green Infrastructure within the Upper Monocacy Watershed are also underway. These include studies of open section roads, roof drains, and other disconnected impervious surfaces.

The assessment was advertised in the Frederick News-Post and was available for a 30-day public comment period per permit requirements, which ended on November 26, 2017. No comments were received.

6.1.3 Little Hunting Creek Watershed Assessment and Restoration Concept Report

The Little Hunting Creek watershed lies within the Upper Monocacy Watershed and covers approximately 10-12 square miles. A watershed assessment was conducted to determine the most beneficial stream and watershed restoration actions. Results of the assessment were used to prioritize sites and areas that would benefit most from restoration activities and achieve water quality improvements and pollutant and sediment load reductions. A desktop assessment was conducted to identify potential sites for stream improvements. Detailed site assessments were conducted and potential projects were identified based on identified impairments of concern for the watershed, feasibility of implementation, and the potential for ecological and biological uplift of the watershed. Five potential restoration projects were identified. An assessment of each project was conducted to determine pollutant load reductions, impervious surface treatment area, and a cost estimate in order to determine a cost benefit analysis. - Based on this, two priority projects were identified that would provide a greater benefit with a lower cost (EA, 2016). Due to stakeholder input and site constraints, only one stream restoration project in the Little Hunting Creek watershed will be under construction in Spring 2019.

The assessment was advertised in the Frederick News-Post and was available for a 30-day public comment period per permit requirements, which ended on November 26, 2017. No comments were received.

6.1.4 Double Pipe Creek Watershed Assessment

The Double Pipe Creek watershed is approximately 123,264 acres and lies within Frederick and Carroll Counties. Frederick County's portion of the Double Pipe Creek Watershed is mostly low density housing or agricultural lands with limited amount of concentrated impervious surfaces to install cost-effective stormwater management opportunities. Due to this unique situation, the Watershed Assessment focused predominately on stream restoration and storm water management, where applicable. The Watershed Assessment kicked off in January of 2018 with most of the field work conducted in the Summer of 2018. It is anticipated the draft Watershed Assessment will be posted to OSER's website for public comment in February 2019.

6.1.5 Catoctin Creek Watershed Assessment

The Catoctin Creek watershed encompasses the southwestern portion of Frederick County and is approximately 76,994 acres nestled between South Mountain to the west and Catoctin Mountain to the east. There are two Phase II permitees within the watershed which include Middletown and Myersville. The Catoctin Creek Watershed Assessment also kicked off in January 2018 with majority of the field work completed in the spring and early summer of 2018. A variety of potential opportunities in stormwater management and stream restoration will be proposed in the draft assessment for the public to review on OSER's website in February 2019.

6.1.6 Potomac River – Frederick County Watershed Assessment

The Potomac River (Frederick County) watershed is one of the smallest watersheds in Frederick County as 448 acres are encompassed within Frederick County. The Potomac River Watershed in Frederick County includes drainage from split of Interstates Route 15 and Route 340 south through portions of Adamstown and Point of Rocks. Another distinct portion of Potomac River is to the west of Brunswick and includes Knoxville. The Watershed Assessment was also kicked off in January 2018 with all potential projects were assessed by the end of August 2018. The draft assessment will also be on OSER's website for public comment in February 2019.

Potomac River (Montgomery County) watershed slightly intersects the Frederick County boundary (445 acres of this watershed are within Frederick County). Due to its small size and upstream location in the watershed, Frederick County is excluded from reduction goals within the TMDLs for this watershed. For this reason, Frederick County did not perform a comprehensive watershed assessment. To be thorough, a desktop analysis was performed while evaluating opportunity in the Potomac River Frederick County Watershed Assessment.

6.2 Restoration Plans

As a requirement of sections PART IV.E.2.a and b of the NPDES MS4 Discharge Permit issued by MDE to Frederick County, the County developed and submitted the *Frederick County Stormwater Restoration Plan* to MDE in June 2016 (a court-issued postponement of six months at the behest of Frederick County Government) which addresses twelve TMDLs for local waterways, two TMDLs for the Chesapeake Bay, and impervious area restoration.

On June 30, 2016, Frederick County submitted fourteen TMDL Restoration Plans including twelve local and two Chesapeake Bay TMDL Restoration Plans to satisfy this requirement as part of its Frederick County Stormwater Restoration Plan (Frederick County, 2016b). Updates to *Frederick County Stormwater Restoration Plan* were submitted to MDE in January 2018 and FY18 updates are included in Appendix N.

The BMPs outlined in this plan are continually updated in the MDE geodatabase submission as projects are updated. MDE_NPDES_MS4 geodatabase tables with these updates include: AltBMPPoly, AltBMPLine, AltBMPPoint, and RestBMP.

Frederick County's Stormwater Restoration Plan demonstrates that Frederick County Government is on track to meet the restoration efforts required under its current permit and has a long term plan to address its portion of stormwater wasteload allocations (SW-WLAs) for all TMDLs in Frederick County. This Plan presents the projects and programs that will provide treatment towards its impervious area restoration and TMDL requirements.

6.2.1 Impervious Area Assessment

Frederick County Government submitted a supplemental impervious area assessment to the Maryland Department of the Environment (MDE) on May 1, 2017 in response to its February 17, 2017 request. As a result of Frederick County losing its challenge to MDE's MS4 service area definition in Circuit Court, MDE asserted in its October 31, 2017 review that contrary to the County's baseline calculation (using the method it determined to be consistent with the Clean Water Act and Code of the Federal Register) of 5,063 untreated acres, that the baseline (using MDE's term of art) is 13,198 acres. The permit has been

remanded to MDE and the issue still in litigation; however, a stay no longer exists on compliance with this issue.

The issue is still in litigation but a stay no longer exists on compliance. The County contracted with the consultant, KCI, in FY18 to revise its impervious cover analysis using a method consistent with what was submitted to MDE, with one key difference. KCI used the jurisdictional boundary for the County as requested by MDE. MDE asserts in its October 31, 2017 review that contrary to the County's baseline calculation (using the method it determined to be consistent with the Clean Water Act and Code of the Federal Register) of 5,063 untreated acres, that the baseline (using MDE's term of art) is 13,198 acres. Previously, the County estimated its 20% retrofit to be 1,013 acres; however, MDE's estimate is 2,620 acres. MDE invited the county to redo its impervious cover analysis and resubmit in the fourth year Annual Report. Consistent with MDE's request, analysis with an updated boundary was performed in FY18, the fourth year of the permit term. The County was determined to have 13,396 impervious acres, 7,044 of which is treated, leaving the County with a 20% retrofit goal of 1,270 acres.

The procedure, analysis, and data are provided in an Impervious Accounting Report in Appendix O. The report discusses Frederick County's boundary and excludable areas along with subtractions relating to bmp treatment, rooftop and non-rooftop disconnect analysis, and existing grass swales. Frederick County employed the following disconnection protocols within their MS4, also attached as Appendix P and Q respectively:

Name: Rooftop Disconnection Protocol (Appendix P)
Approval Status: Officially Approved by MDE
Consultant Performing Work: KCI Technologies and McCormick Taylor
Description: The rooftop disconnect analysis identifies buildings with surrounding vegetative areas that are effectively treating the runoff from the building.
Effect on Impervious Accounting: Subtraction from County Baseline

Name: Non - Rooftop Disconnection Protocol (Appendix Q)
Approval Status: Informally (verbally) Approved by MDE
Consultant Performing Work: KCI Technologies and McCormick Taylor
Description: Non-rooftop disconnect analysis focuses on the identification of roads and driveways with surrounding vegetative areas that are effectively treating the runoff.
Effect on Impervious Accounting: Subtraction from County Baseline

Frederick County employed the following protocol for identifying existing grass swales within their MS4:

Name: Existing Water Quality Grass Swale Identification Protocol
Approval Status: Officially Approved by MDE, May 18, 2016
Consultant Performing Work: Dewberry
Description: The water quality grass swale analysis identifies existing grass swales providing baseline impervious treatment.
Effect on Impervious Accounting: Removal from County Baseline

Further information can be found in the Impervious Analysis Report and attachments within Appendix O.

6.2.2 Restoration Plan

The individual plans in the County's Restoration Plan are organized by Restoration Tier. Restoration Tiers include Baseline, Completed, Programmed, Identified, and Potential scenarios. Baselines are the TMDL loads without restoration BMPs. Completed projects were finished between March 11, 2007, the expiration date of the previous permit, and by June 30, 2018, the end of the previous fiscal year. Programmed projects are either funded by the County's Capital Improvement Program or other programs during the permit term, which is set to expire December 30, 2019. Identified projects can be found in the County's Watershed Assessments, Watershed Management Plans, Restoration and Retrofit Assessments, Stormwater Master Plans, and other documents completed by Frederick County Government and its partners and consultants to identify watershed restoration opportunities. Potential Projects are hypothetical projects based on the most cost-effective BMP types and acres of available land.

The Restoration Plan should be viewed as a planning document that is subject to the County's review and revision in future years consistent with adaptive management, which is a cornerstone of any good stormwater program. The plans include estimated dates and costs for completion of various projects that may change over time. The County plans to substitute projects based on lessons learned in earlier years. The County's ability to implement milestone actions depends on approval and funding from the local governing body in future years. The Restoration Plan is subject to future refinement by the County based on new or additional information. The County conducted the initial effort in-house and updated its Restoration Plans with the consultant KCI Technologies, Inc. for 2017 and 2018. At MDE's request, Frederick County ensured the updated plan included individual TMDL updates and targeted deadlines to reach the targeted reductions. The County is dedicated to committing resources to TMDL compliance, and presents timeframes that are realistically achievable. The Plan in 2018 has been modified to include updates to the Impervious Cover Analysis.

Table 8 summarizes types of project completed and programmed within the County, and Appendix R lists the County completed projects. More detailed information about the County's restoration efforts are found in the restoration plan in Appendix N. Note that these efforts do not yet include water quality trades.

Table 8 - Complete and Programmed Impervious Restoration Credit by Type
(To be Complete by December 29, 2019)

BMP Type	Completed as of 30-Jun-18	Programmed (Completed by Dec 29, 2019)	Total
Stormwater			
Wet Pond	11.83	394.18	406.01
Filtering		15.73	15.73
Bioretention	4.00	5.89	9.89
Bioswale	3.30		3.3
Open Grass Channel		9.00	9.00
Stream Restoration	57.01	66.07	123.08
Tree Planting	99.03	104.33	203.36
Septic Denitrification	56.68		56.68
Septic Connections to WWTP	2.73		2.73
Septic Pumping	97.68	86.55	184.23
Vacuum Street Sweeping	23.59		23.59
Catch Basin Cleaning			
Outfall Stabilization		20.00	20.00
Redevelopment Restoration Credit	9.60		9.60
Total	**365.45**	**701.75**	**1,067.20**

6.3 Public Participation

As required by Part IV.E.3 of the MDE NPDES MS4 Discharge Permit, public participation is required for Frederick County's watershed assessments and restoration plans. The specific requirements include:

1. Notice in a local newspaper indicating a 30-day public comment period for each watershed assessment and restoration plan,
2. Notice in a local newspaper announcing that public information procedures are provided on the County's website for each watershed assessment and restoration plan, and
3. A summary in the Annual Report on public participation activities for each of the watershed assessments and restoration plans.

Frederick County has completed several assessments and posted drafts to its website. The drafts of the following assessments were advertised through the Frederick News Post (Appendix S) and posted to the website for a 30 day public comment period with no comments received, which ended on November 26, 2017:

- Upper Monocacy Watershed Assessment
- Lower Monocacy Watershed Assessment
- Ballenger Creek Stormwater Master Plan
- Little Hunting Creek Watershed Assessment and Restoration Concept Report
- County-owned Stormwater Management Best Practices Retrofit Assessment, and
- Point of Rocks Storm Drain Analysis

Anticipated assessments that will be available for public review in FY19 include:

- Catoctin Creek Watershed Assessment
- Double Pipe Creek Watershed Assessment
- Potomac Direct Watershed Assessment

6.4 TMDL Compliance

The *Frederick County Stormwater Restoration Plan* is included as Appendix N. The Restoration Plan includes the County's approach to addressing its local TMDL requirements including three bacteria, four phosphorus, and five sediment local TMDLs as well as nitrogen and phosphorus Chesapeake Bay TMDLs, and impervious area reduction requirements. Additionally, the geodatabase is consistently updated with updates from the restoration program.

Baseline, target, permit and current loads for nutrient, sediment, and bacteria local TMDLs are presented in the MDE_NPDES_MS4 geodatabase table LocalStormwaterWatershedAssessment. Countywide baseline, target, permit and current loads are presented in the MDE_NPDES_MS4 geodatabase table CountywideStormwaterWatershedAssessment.

Baseline and target loads including modeling approach and projects included in each of the models are described, in detail, in the Restoration Plan. All County completed structural and nonstructural water quality improvement projects, enhanced stormwater management programs, and alternative stormwater control initiatives through 12/30/2014 were modeled using the procedures outlined below to calculate 2014 permit loads, while all treatment through 6/30/2018 was modeled to calculate 2018 current loads.

It is important to note, permit and current loads are only presented in the Annual Report and may not match what is presented in the County's Stormwater Restoration Plan. Permit and current loads are modeled on top of growth. Background land use loads increase as new development occurs throughout the years, which is why loads appear to increase between baseline, permit, and current conditions even with additional treatment from stormwater BMPs and other practices. Per guidance from MDE, permittees do not account for growth in local TMDL progress models and is reflected in the County's Restoration Plan and the December 21, 2018 updated Plan as it focuses on achieving the percent reductions without accounting for growth.

The following sections present the methodology and resultant values for baseline, target, permit, and current loads presented in the following tables in the MDE_NPDES_MS4 geodatabase: LocalStormwaterWatershed Assessment and CountywideStormwaterWatershedAssessment.

6.4.1 Local TMDL Requirements

There are currently 12 final approved TMDLs within Frederick County with SW-WLAs. It's necessary for permittees to determine whether their treatment plans can meet TMDL compliance targets, which is usually accomplished through modeling. However, models and calculations used to develop TMDLs are rarely the same ones used for implementation. TMDL modeling is focused on determining the maximum watershed load that will allow the waterbody to meet water quality standards. Implementation modeling does not involve the receiving water, but only the watershed load. The purpose is to determine the level of improvements or treatment that needs to be implemented to reduce existing loads to the TMDL amount.

Because the models are different, absolute values of loads will not be the same. In order to derive the County MS4-specific SW-WLA load reduction targets, MDE's published baseline values for each TMDL need to be recalculated in an implementation model. The implementation model provides a new baseline based on conditions when the TMDL was developed. The load reduction is calculated from the percent reduction published in the TMDL. The process of matching loads from the TMDL model to the implementation model is called *calibration.*

6.4.2 Calibration Procedure

Frederick County's TMDLs were developed by MDE at different periods in time using a variety of models. In order to use a currently available model for analysis, the reduction targets and loads need to be translated or "calibrated" from the model used to develop the TMDL to the current model.

6.4.3 Baseline Area

Baseline loads for each TMDL watershed are based on GIS overlays of the TMDL boundary, the County's MS4 jurisdiction, impervious cover derived from planimetric mapping, and urban land use delineated in MDP's land use/land cover files, and loading rates from two sources, depending on the TMDL:

- TMDL boundaries were downloaded from the MDE TMDL Data Center
- Frederick County's MS4 jurisdiction boundary was delineated by starting with the County boundary, then identifying excludable areas that are not properly included within the County's MS4 including State and Federal lands, MDOT SHA Phase I land, industrial stormwater permittees, and areas served by municipal MS4s.

- The County mapped impervious cover using aerial orthoimagery in 2005, with a subsequent update in 2014.
- MDP mapped land cover statewide in 2002 and 2010. Urban land use includes all codes beginning with 1. Baseline loads do not include land coded 2x (agriculture), 4x (forest), 50 (water), 60 wetlands), 73 (barren), or 241-242 (agriculture). This approach which models loads from urban pervious and impervious developed land use is consistent with CAST and the CBWM and allowed the County to use CBWM loading rates.

Each TMDL has a baseline year, and the GIS overlays were used in the closest approximation, shown in **Error! Reference source not found.**.

Table 9 - GIS Data Used for Baseline Modeling

TMDL	Baseline Year	MDP Land Cover	Frederick Impervious Cover
Sediment	2000	2005	2005
	2005	2005	2005
Phosphorus	2009	2014	2014
Chesapeake Bay Nitrogen, Phosphorus, and Sediment	2010	2014	2014
E. Coli	2004	2005	2005

The baseline model includes County BMPs installed prior to the TMDL baseline year on top of baseline land use background loads.

1. County BMPs installed prior to the TMDL baseline year were added to the model.
2. The reduction percentage published in the TMDL document was then applied to the modeled baseline loads to calculate a calibrated reduction in EOS-lbs/yr for local TMDLs and DEL lbs/yr for the Bay TMDL.
3. A calibrated SW-WLA was calculated by subtracting the calibrated reduction from the modeled baseline load.

Calibrated load reductions calculated based on TMDL percent reductions and baseline loads modeled using Frederick County baseline urban pervious and impervious land use and baseline treatment will be the target reductions used for TMDL compliance for the Bay TMDL and nutrient and sediment local TMDLs.

6.4.4 Nutrient and Sediment Modeling

Nutrient and sediment loading rates were derived from MAST output for the no-BMP scenario. Loads for regulated pervious and impervious developed land were divided by the land area, resulting in EOS or DEL loads in lbs/ac.

Reductions for nutrients and sediments were modeled using a custom geodatabase script that uses the most accurate up-to-date information on BMPs with physical locations. These include all ESD BMPs, all Structural BMPs, and Alternative BMPs with the exception of street sweeping, catch basin cleaning, storm drain vacuuming, and septic system improvements. The script calculates loads to each BMP using verified and reported drainage area and impervious area. Load reductions for each type of BMP are based on MDE 2014 Accounting Guidance.

6.4.5 Bacteria Modeling

Implementation modeling and calibration were performed using the Watershed Treatment Model (Caraco, 2013). Inputs for loads are modeled in two worksheets: Primary Sources, which calculates runoff loads by land use type and area within the watershed, and Secondary Sources, which calculates dry weather loads.

Primary Sources

The WTM uses a variation of the Simple Method (Schueler, 1987) to calculate loads from urban areas and export coefficients to calculate rural loads. The Simple Method requires area and percent impervious for each land use to calculate annual runoff, and an Event Mean Concentration (EMC) to calculate loads. Loads were calculated using EMCs reported in the National Stormwater Quality Database (NSQD) (Pitt et al., 2004). EMCs used in the model are shown in **Error! Reference source not found.**, which also cross-references land use categories from MDP and the NSQD.

Table 10 - EMCs Used for Modeling

MDP Land Use	MDP LU Codes	NSQD Land Use	EMC (MPN/100 mL)
Residential	11,12,13,191,192	Residential	8,345
Open Urban	18	Open Space	7,200
Commercial / Institutional	14,16	Commercial (1)	4,300
Roadway	80	Freeways	1,700

Secondary Sources

Secondary sources are pollutant sources that cannot be calculated based on land use information alone. Some of these sources, such as septic systems, CSOs and SSOs, are at least partially composed of wastewater. Other secondary bacteria sources include illicit discharges, livestock, and marinas. County GIS data on miles of sanitary sewer, sewered and unsewered areas, and residential parcels were used to develop input data.

Calibrated SW-WLAs and Reduction Targets

In order to help pinpoint sources, Bacteria Source Tracking (BST) was included in each of the TMDLs to identify relative contributions from various sources of bacteria to in-stream water samples. BST uses DNA, RNA, or patterns of antibiotic resistance to categorize the fraction of bacteria coming from the four general sources described above: humans, domestic pets, wildlife, or livestock for the watershed as a whole. Consistent with MDE guidance (MDE, 2014), the two sources which addressed in this plan are human and domestic. Livestock sources are treated by agricultural BMPs, which are not included in treatment for the MS4. Similarly, wildlife sources (other than urban wildlife) are not treated by BMPs or management measures associated with the MS4.

In all three of the TMDLs, two reduction percentages are shown: the Maximum Practicable Reduction (MPR) and the target reduction for the SW-WLA. MPR is based on reductions for each of the four source categories. Human sources potentially have the highest risk of causing disease, so the maximum reduction was set at 95%. The domestic pet reduction was based on an estimated success of education and outreach programs, set at 75%. The livestock target, also 75%, was based on the level of sediment reductions from agricultural BMPs. Wildlife reductions were assumed to be 0%. Table shows the results of the calibration analysis.

Calibrated load reductions calculated based on TMDL percent reductions and baseline loads modeled as described above will be the target reductions used for TMDL compliance local TMDLs. These values are presented in bold in the Calibrated Reduction column of Table 11Table 11 and Table 12.

Pollutant results listed in columns Calibrated WLA and Calibrated Baseline Load are presented in the fields TARGET_LOAD and BASELINE_LOAD, respectively, in the MDE_NPDES_MS4 geodatabase table LocalStormwaterWatershedAssessment.

Table 11 - Calibrated Nutrient and Sediment Local TMDL SW-WLAs and Target Load Reductions

Watershed Name	Watershed Number	Baseline Year	Pollutant	MDE Published Reduction Percent[1]	Baseline Impervious Area[2]	Baseline Pervious Area[2]	Calibrated Baseline Load[3]	Calibrated Reduction[4]
Catoctin Creek	2140305	2009	Phosphorus	11.0%	1,032	8,357	8,681	**955**
		2000	Sediment	49.1%	880	7,666	2,875,114	**1,411,681**
Double Pipe Creek	2140304	2009	Phosphorus	73.0%	103	887	804	**587**
		2000	Sediment	46.8%	65	629	192,286	**89,990**
Lower Monocacy River[5]	2140302	2009	Phosphorus	28.0%	5,407	24,212	29,354	**8,219**
		2000	Sediment	60.8%	4,677	23,355	5,505,954	**3,347,620**
Potomac River Montgomery County	2140202	2005	Sediment	36.2%	0	0	0	**0**
Upper Monocacy River	2140303	2009	Phosphorus	4.0%	1,262	8,340	8,789	**352**
		2000	Sediment	49.0%	1,105	8,006	1,928,453	**944,942**

Target reduction loads used for TMDL compliance shown in bold text.

1) Published Reduction Percent from the MDE TMDL Data Center SW WLAs for County Storm Sewer Systems in Frederick County

2) County MS4 urban impervious and pervious acres for the TMDL baseline year.

3) Baseline loads modeled using County BMPs installed prior to the TMDL baseline year on top of baseline land use background loads.

4) Calibrated reductions calculated by applying the MDE published percent reduction to the calibrated baseline loads.

5) The Lake Linganore watershed is listed under a separate phosphorus and sediment TMDL and is not included in this analysis.

Table 12 - Calibrated E. coli Local TMDL Target Load Reductions

Watershed Name	Baseline Year	MDE Published Reduction Percent[1]	MDE Published MPR Percent[2]	MDE Published Human and Domestic BST Percent[2]	Target BST WLA Reduction Percent[4]	Target BST MPR Reduction Percent[4]	Calibrated Baseline Load bn MPN/yr[3]	Calibrated BST WLA Reduction bn MPN/yr[4]	Calibrated BST MPR Reduction bn MPN/yr[4]
Double Pipe Creek	2004	98.80%	80.80%	57.00%	56.32%	46.06%	57,383	**32,316**	**26,428**
Lower Monocacy River	2004	92.50%	76.06%	49.00%	45.33%	37.27%	4,521,252	**2,049,257**	**1,685,043**
Upper Monocacy River	2004	97.00%	85.30%	50.00%	48.50%	42.65%	1,203,672	**583,781**	**513,366**

Target reduction loads used for TMDL compliance shown in bold text.

1) Published Reduction % from the MDE TMDL Data Center SW WLAs for County Storm Sewer Systems in Frederick County

2) Published MPR % and BST% from TMDLs for each watershed.

3) Baseline loads modeled in WTM using County BMPs installed prior to the TMDL baseline year on top of baseline runoff loads from MDP urban land use and secondary sources.

4) Calibrated reductions calculated by applying the product of the BST Human/Domestic percent and the MDE published percent reduction to the WTM calibrated baseline loads.

6.4.6 Bay TMDL

The Chesapeake Bay TMDL, established by the EPA (EPA, 2010), sets pollution limits for nitrogen, phosphorus, and sediment in the Chesapeake Bay Watershed. This TMDL, required under the Clean Water Act, was in response to the slow progress by states within the watershed to limit their pollutants to levels which meet water quality standards in the Bay and its tidal tributaries. Total limits set in the Bay TMDL for the states of Delaware, Maryland, New York, Pennsylvania, Virginia, West Virginia, and the District of Columbia are "185.9 million pounds of nitrogen, 12.5 million pounds of phosphorus and 6.45 billion pounds of sediment per year—a 25 percent reduction in nitrogen, 24 percent reduction in phosphorus and 20 percent reduction in sediment" (EPA, 2010). The TMDL also sets "rigorous accountability measures" for state compliance.

While not a requirement in the County's MS4 permit, restoration strategies to meet local TMDL reduction targets and impervious restoration treatment were also modeled against the Bay TMDL goals in order to calculate progress. The County's MS4 permit is requiring compliance with the Chesapeake Bay TMDL through the use of the 20% impervious surface treatment strategy as described in greater detail in the Restoration Plan. Results for 2014 permit and 2018 current loads can be found in the MDE_NPDES_MS4 geodatabase table CountywideStormwaterWatershedAssessment.

6.4.7 Pollutant Loadings

The results below present 2014 permit and 2018 current loads for all TMDLs.

All completed structural and nonstructural water quality improvement projects, enhanced stormwater management programs, and alternative stormwater control initiatives through 12/30/2014 were modeled to calculate 2014 permit loads, while all treatment through 6/30/2018 was modeled to calculate 2018 current loads. Permit and current loads for nutrient and sediment local TMDLs are presented in Table 13 and in the MDE_NPDES_MS4 geodatabase table LocalStormwaterWatershedAssessment. Countywide permit and currently loads are presented in Table 14 and are also provided in the MDE_NPDES_MS4 geodatabase table, CountywideStormwaterWatershedAssessment.

Table 13 - Permit and Current Loads for Local TMDLs

Watershed Name	Watershed Number	Pollutant	Permit Load[1]	Current Load[2]
Catoctin Creek	02140305	Phosphorus	8,681	8,654
		Sediment	2,874,462	2,866,100
Double Pipe Creek	02140304	Phosphorus	804	804
		Sediment	192,286	192,286
		E. coli	57,383	55,444
Lower Monocacy River	02140302	Phosphorus	29,202	28,720
		Sediment	5,388,264	5,347,925
		E. coli	4,520,165	4,488,749
Potomac River Montgomery County	02140202	Sediment	0	0
Upper Monocacy River	02140303	Phosphorus	8,712	8,600
		Sediment	1,877,601	1,805,255
		E. coli	1,203,672	1,195,964

1) Including treatment from County BMPs through 12/30/2014
2) Including treatment from County BMPs through 06/30/2018

Table 14 - Countywide Permit and Current Loads

Countywide Loads	TN-DEL lbs/yr	TP-DEL lbs/yr
Permit Load	581,357	23,795
Current Load	574,344	23,057

7 Assessment of Controls

7.1 Watershed Restoration Assessment

During the past year, Frederick County has worked on a number of initiatives to monitor, assess, protect, and restore watersheds. Appendix T provides monitoring and assessment results, and summarizes progress on the County's watershed protection and restoration efforts from July 2017 - June 2018 from the long term monitoring occurring within the Peter Pan Run watershed. The County installed a temperature meter last Fiscal Year and has since then successfully captured outfall temperatures.

7.1.1 Stream Monitoring to Identify and Evaluate Water Quality Problems

In 1999, Frederick County initiated its original stream monitoring program, the goal of which was to identify and evaluate water quality problems in its priority watersheds and subwatersheds by conducting, on a rotating basis, stream monitoring using both biological and physical habitat methods. Monitoring was conducted every two to three years in the County's three highest priority watersheds: Lower Bush Creek, Ballenger Creek, and Lower Linganore Creek. This continued until 2006.

In 2007, the County conducted a pilot program that would serve as the basis for a new approach to stream monitoring that would begin to look at stream health throughout the County. Sampling at randomly selected locations was performed in the Bennett Creek and Catoctin Creek watersheds. Lessons learned in this pilot project were then used to refine the study design for a County-wide stream program.

In 2008, the County officially redesigned its monitoring program to include two separate monitoring efforts beyond the Watershed Restoration Assessment of the Peter Pan Run watershed: (1) targeted restoration monitoring and (2) County-wide, probability-based stream monitoring, with sites selected randomly and stratified by watershed. The targeted restoration monitoring effort for 2018 involved stream sampling in Bennett Creek, Fishing Creek, and the Potomac Direct Watersheds in support of on-going and potential future restoration and community outreach efforts (Appendix U). Monitoring efforts are selected on an individual project basis based on the projects' goals and any regulatory requirements directly related to those projects. The County initiated its third County-wide round of monitoring (2018-2021) with its first round in 2008-2011 and its second in 2013-2016. County-wide monitoring reports are available on OSER's website for public access.

7.1.2 Watershed Assessment and Restoration Overview

The County's Watershed Restoration Assessment continued to focus on the Peter Pan Run watershed through targeted stream monitoring assessments including: physical, chemical, and biological data, collected during designated index periods (Southerland et al. 1999, Morgan and Roth 2005). Year 2018 sampling included collection of water quality data, benthic macroinvertebrate and fish sampling, and quantitative physical habitat assessment using MBSS habitat and geomorphic data collection methods. Biological and physical monitoring methods employed in this survey are the same as those listed in Table

1-2 of Appendix T, and described in detail in the Quality Assurance Project Plan for Biological and Physical Monitoring in Peter Pan Run and Other Selected Watersheds (Morgan and Roth, 2005). Key findings are summarized in Appendix T.

The County recognizes MDE's September 20, 2018 Annual report comment regarding the missing outfall water temperatures for the 7/28 and 9/28 storms. The County successfully installed a temperature meter as well as new water quality monitoring equipment to continue its efforts in capturing the required monitoring parameters.

Data for all monitoring activities is included in the in the MDE_NPDES_MS4 geodatabase in the following features and tables: MonitoringSite, MonitoringDrainageArea, ChemicalMonitoring, LocalConcern BiologicalMonitoring, NarrativeFiles.

7.2 Stormwater Management Assessment

A detailed report capturing all of the long-term monitoring occurring in the Peter Pan Run watershed was completed to meet the requirement of the County's NPDES permit. A complete report of the findings can be found in Appendix S.

8 Program Funding

Frederick County has consistently maintained adequate funding to support the requirements of the NPDES program through its Operating and CIP budgets. This section outlines expenditures from FY18, which are also presented in Appendix V.

The Operating Budget requires annual requests, with approval granted from year-to-year. Funds from the Operating Budget generally do not carry over from year-to-year. The CIP Budget noted here requires an annual submission, with approval granted from year-to-year.

The Operating budget for FY18 was $2,525,967 including $1,656,129 in the NPDES Pay-Go Operating budget and an estimated $869,838 for Pay-Go Operating within other Departments and Divisions. The Capital budget was $8,110,599. The total NPDES budget was estimated to be $10,636,566.

The Operating budget for FY17 was $2,673,697 including $1,377,386 in the NPDES Pay-Go Operating budget and an estimated $1,296,311 for Pay-Go Operating within other Departments and Divisions. The Capital budget was $4,116,148. The total NPDES budget was estimated to be $6,789,845.

The Operating budget for FY16 was $2,650,420 including $1,354,109 in the NPDES Pay-Go Operating budget and an estimated $1,296,311 for Pay-Go Operating within other Departments and Divisions. The Capital budget was $3,527,575. The total NPDES budget was estimated to be $6,177,995.

The Operating budget for FY15 was $2,383,553 including $1,087,242 in the NPDES Pay-Go Operating budget and an estimated $1,296,311 for Pay-Go Operating within other Departments and Divisions. The Capital budget was $2,595,847. The total NPDES budget was estimated to be $4,979,400.

More detailed information on budget allocations are reported in the table FiscalAnalyses in the MDE_NPDES_MS4 geodatabase. Fiscal reporting is based on the encumbrance method. Note that MDE's geodatabase excludes several permit categories to include Permit Administration, Legal Authority, and Source Identification. Several large efforts like the geodatabase and Annual Report are not included; the County has noted these expenses in comments. Bay Restoration Fund grants for septic upgrades are included this year in Watershed Restoration. There is a timing lag between budgeting, encumbrances and expenditures, which largely explains why the encumbrance numbers do not match budget numbers. The geodatabase reporting does not match the FAP/WPRP reporting by definition.

As required by the Annotated Code of Maryland ENV §4-202.1, Frederick County is submitting a Financial Assurance Plan (FAP) and Watershed Protection and Restoration Program (WPRP) Annual Report to MDE at the same time as this Annual report submission. Both documents provide the five-year funding strategy for addressing the County's NPDES MS4 Permit. The FAP and WPRP Annual Report documents were prepared by County staff. The County Council, as the "local governing body" held a public hearing and voted on approval of the financial assurance plan on October 16, 2018. The FAP and WPRP Annual Report include all activities that have been completed in compliance with the Permit, and five-year projections to Fiscal Year 2020 for the implementation of its stormwater program and best management practices (BMPs) necessary for meeting Permit requirements. MDE sent a letter to Frederick County on October 17, 2016 finding the previous submission "sufficient" per legislative requirement and commending the County for its support of the program.

The County has made a substantial commitment to comply with its Permit, has adequately funded the Permit to the MEP, and is on track programmatically to comply with the Permit to the Maximum Extent Practicable. Funding for the Impervious Surface Restoration Plan by Fiscal Year 2020 is projected to be $54,178,669. This funding is reflected in the past and current budgets, and is in the programmed CIP. This represents 100% of the MEP cost to implement the Permit to the MEP; furthermore, the County has funded its first four years of the Permit at 100%, exceeding the 75% minimum compliance benchmark. All proceeds from the stormwater remediation fee go to the Watershed Protection and Restoration Fund. In the previous fiscal year this amounted to $511.77.

Evaluation: Frederick County continued to maintain adequate funding to support its NPDES MS4 permit program in Fiscal Year 2018. Adequate funding was requested and approved to meet NPDES requirements in both the Operating and Capital Budgets. MDE found Frederick County in compliance with its Financial Assurance Plan and Watershed Protection and Restoration Plan Annual Report On October 17, 2016. Adequate funding enabled the Watershed Management Section to complete its NPDES requirements in

full compliance. An updated FAP and WPRP were approved by the County Council on October 16, 2018 and are submitted to MDE at the same time as this Annual Report.

9 Special Programmatic Conditions

9.1 Bay TMDL

The Bay TMDL requirements related to restoration plans are addressed previously in section 6, specifically in section 6.4.2 Bay TMDL.

Phase II is in place and the County is cooperating with MDE to coordinate Phase III WIPS that account for the 2017 updates.

Staff worked with MDE to improve TMDL implementation. OSER attended MS4-MDE TMDL coordination meetings on 8/4/2017 and 11/3/2017. Staff participated in a Watershed Implementation Plan (WIP) Workshop on June 19, 2018 sponsored by the Harry R. Hughes Center for Agro-Ecology and coordinated with MDE (article link: https://www.fredericknewspost.com/news/environment/pollution/farms-wastewater-tapped-again-for-second-half-of-chesapeake-bay/article_a892267b-5acb-5fec-8d34-8eafd6cfd994.html); the writeup from these Phase III WIP meetings was sent to Governor Hogan. Staff spoke on tools to help local government to achieve their Chesapeake Bay Restoration goals. Staff participated in MDE's Water Quality Technical Advisory Committee that helped to develop trading policies for the state's nascent nutrient trading market and suggested ways to improve Phase III WIP implementation. Frederick County continues to support the development of the WIP through its involvement with the Maryland Association of Counties, Metropolitan Washington Council of Governments, and Maryland Municipal Stormwater Association.

9.2 Water Resources Element

The Board of County Commissioners formally adopted the complete Water Resources Element (WRE) technical document on September 23, 2010 (Frederick County, 2010). The WRE provides a detailed presentation of the County's water resources plus limitations and challenges to meeting future population needs. Wastewater treatment capacities and future projected treatment needs are also analyzed. The WRE is divided into three components: Drinking Water Assessment, Wastewater Assessment, and Managing Stormwater and Non-Point Source Pollution.

10 Reapplication

Part V.C requires Frederick County to submit reapplication in its fourth year annual report. That application is provided in Appendix W.

11 References

EA 2016. Little Hunting Creek Watershed Assessment and Restoration Concept Report, Frederick County, Maryland. Prepared for Frederick County Community Development Division, Frederick, MD. EA Engineering, Science, and Technology, Inc., PBC. April 2016.

EPA. 2010. Chesapeake Bay Total Maximum Daily Load for Nitrogen, Phosphorus and Sediment, December 29, 2010. U.S. Environmental Protection Agency in collaboration with Delaware, the District of Columbia, Maryland, New York, Pennsylvania, Virginia, and West Virginia. Region 3 - Chesapeake Bay Program Field Office. Annapolis, MD.

Frederick County. May 2004. Lower Monocacy River Watershed Restoration Action Strategy. Frederick, MD.

Frederick County. May 2005. Upper Monocacy River Watershed Restoration Action Strategy. Frederick, MD.

Frederick County. June 2016a. Financial Assurance Plan (FAP) and Watershed Protection and Restoration Annual Report (WPRP). Prepared by the Frederick County Office of Sustainability and Environmental Resources, Frederick, MD.

Frederick County. June 2016b. Frederick County Stormwater Restoration Plan. Prepared by the Frederick County Office of Sustainability and Environmental Resources, Frederick, MD.

Frederick County. 2010. Water Resources Element – A Functional Element of the 2010 County Comprehensive Plan. Adopted September 23, 2010. Prepared by the Frederick County Division of Planning, Frederick, MD.

Maryland Department of the Environment (MDE). 2014. Accounting for Stormwater Wasteload Allocations and Impervious Acres Treated – Guidance for National Pollutant Discharge Elimination System Stormwater Permits. Maryland Department of the Environment. August 2014. Baltimore, MD.

Maryland Department of the Environment (MDE). 2017. TMDL Data Center. Retrieved from http://www.mde.maryland.gov/programs/Water/TMDL/DataCenter/Pages/index.aspx. Last retrieved on September 1, 2017.

Morgan, B. and N. Roth. 2005. Quality Assurance Project Plan for Biological and Physical Monitoring in Peter Pan Run and Other Selected Watersheds. Prepared by Versar, Inc., Columbia, MD for Frederick County - Division of Public Works. Frederick, MD. November 2005.

Perot, Morris et al. 2002. Watershed Assessment of Lower Linganore Creek Frederick County, Maryland. Prepared for Frederick County Division of Public Works. Versar, Inc. June 2002.

Perot, Morris et al. 2003. An Assessment of Stream Restoration and Stormwater Management Retrofit Opportunities in Lower Bush Creek Watershed, Frederick County, Maryland. Prepared for Frederick County Division of Public Works. Versar, Inc. August 2003.

Perot, Morris et al. 2005. An Assessment of Stormwater Management Retrofit and Stream Restoration Opportunities in Ballenger Creek Watershed, Frederick County, Maryland. Prepared for Frederick County Division of Public Works. Versar, Inc. August 2005.

Perot, Morris et al. 2006. An Assessment of Stormwater Management Retrofit and Stream Restoration Opportunities in Linganore Creek Watershed, Frederick County, MD. Prepared for Frederick County Division of Public Works. Versar, Inc. June 2006.

Roth, Nancy et al. 2001a. Final Report Watershed Assessment Of Ballenger Creek Frederick County, Maryland. Prepared for Frederick County Division of Public Works. Versar, Inc. January 2001.

Roth, Nancy et al. 2001b. Watershed Assessment of Lower Bush Creek, Frederick County, Maryland. Prepared for Frederick County Division of Public Works. Versar, Inc. March 2001.

Southerland, M., E. Rzemien, and M. Perot. 1999. Long-Term Monitoring Plan for the Peter Pan Run Watershed, Frederick County, Maryland. Prepared by Versar, Inc., Columbia, MD, for Frederick County Department of Public Works, Division of Development Review. Frederick, MD.

Stribling, Sam et al. 2008. Bennett Creek Watershed Assessment, Prepared for Frederick County Division of Public Works. Tetra Tech. March 2008.

Stribling, Sam et al. 2009. An Assessment of Stormwater Management Retrofit and Stream Restoration Opportunities in Bennett Creek Watershed, Frederick County, Maryland, Prepared for Frederick County Division of Public Works. Tetra Tech. April 2009.

United States Coast Guard National Response Center (USCG), National Response Center (NRC). 2017. 2016 Reports and 2017 Reports. http://www.nrc.uscg.mil/. Accessed on 11/08/2017.

Versar. 2002. An Assessment of Road Maintenance Activities in Frederick County and Their Effect on Stormwater Runoff Quality. Prepared by Versar Inc., Columbia, MD, for Frederick County Division of Public Works. May 2002.

Versar 2003. *Re*commendations for Alternatives to Pesticide/Herbicide/Fertilizer Use for Frederick County. Prepared by Versar Inc., Columbia, MD, for Frederick County Division of Public Works. December 2003.

Versar, Inc. 2016. Frederick County Dry Weather Screening Program: Response, Site Screening, and Reporting Protocols. Prepared by Versar, Inc., Columbia, MD, for Frederick County, MD, Office of Sustainability and Environmental Resources. August 2016.